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BRITISH MEDICAL JOURNAL

LONDON SATURDAY OCTOBER 18 1947

THE AETIOLOGY AND PROPHYLAXIS OF PUERPERAL SEPSIS*

BY

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As this Congress is being held to celebrate the two-hundredth anniversary of the foundation of the Rotunda Hospital it is not, I hope, inappropriate to attempt to correlate the battles in the long war against puerperal sepsis with the history of the hospital. I propose to divide the two hundred years of the hospital's existence into four periods each of half a century.

The first half-century, 1745–95, presents a melancholy succession of epidemics of childbed fever alternating with brief interludes during which the prevalence of the disease was endemic rather than epidemic. In founding a lying-in hospital, Mosse was trying a more dangerous experiment than he realized. Childbed fever existed in the homes of rich and poor alike in the eighteenth century, but it was not then a very prevalent condition. When the attendants were aged wise women, with an amateur rather than a professional status and a strictly limited clientele, the danger of transfer of infection from one woman to another was slight and epidemics were unlikely to occur. Mosse's plan of herding in one building a number of parturient women and entrusting the supervision of their deliveries to professional midwives had inherent in it the seeds of disaster. So long as no case of childbed fever occurred all was well, but a single case had as its almost inevitable sequel an epidemic.

The rise of the man midwife was in itself responsible for an increase in the number of cases of puerperal sepsis. The man midwife undertook the care of a far larger number of labours than did the woman, and to the risk of transferring the seeds of sepsis from uterus to uterus he added the further risks of transferring by his hands to the birth canal of his patient these seeds derived from other fertile nurseries—wounds with their "laudable pus," droplets from the throats of scarlet fever patients, corpses in the anatomy room of the medical school. The wonder is not that puerperal sepsis was constantly present in the Rotunda, as it then was in every other lying-in hospital, but that these institutions did not acquire an even more evil reputation and that they and their staffs escaped from the fury of the mob, incensed at the slaughter of so many innocents.

In the next half-century (1795–1845) two remarkable Masters, Labatt (1814–21) and Collins (1828–33), stand out above the others. They sought, not entirely unsuccessfully, to combat the disease by such limited degree of isolation as was available, by scouring of furniture, by washing and stoving of bedding, by fumigation of wards, by applications of chloride of lime, and by whitewashing. They anticipated Holmes and Semmelweis in suspecting that puerperal fever was infectious, that infection was conveyed from the woman suffering from puerperal sepsis to the healthy parturient woman, and that the transmitting agent was far too often the hands of the doctor.

The third half-century, 1845–95, started badly. Reactionaries such as Denham (1861–8) and Johnston (1868–75) opposed the new ideas of Labatt and Collins and of Holmes and Semmelweis, but slowly those ideas spread, and when in 1879 Pasteur dramatically demonstrated the cause of childbed fever as "chapelets en grain," the time was ripe and a new era was born. Pasteur inspired Lister, and the third half-century ended nobly in the Rotunda with Atthill (1875–82), Macan (1882–9), and Smyly (1889–96), under whom, within a period of less than twenty years, scepticism and opposition gave place to a whole-hearted acceptance of Listerism, and the antiseptic era reached its peak.

The fourth half-century (1895–1945) brings us almost up to to-day. In no previous half-century had similar discoveries been made in aetiology, therapeutics, and prophylaxis. So numerous were the advances that it is difficult even to catalogue them. At the beginning of this period bacteriologists had largely accepted the streptococcus as the cause of puerperal sepsis, but it was hard to keep one's faith when streptococci were so frequently present without sepsis. With Schottmüller's application of culture on blood agar to the differentiation of *Str. haemolyticus* from *Str. non-haemolyticus* a real advance was made. Now all was well: puerperal fever was due to *Str. haemolyticus*. But doubts again appeared. A haemolytic streptococcus could be cultivated from the lochia of a woman who was certainly not suffering from puerperal sepsis, who was not even morbid. Further subdivision of the haemolytic streptococci was urgently required. Fermentation of carbohydrates was used by many workers, including myself, but without either satisfaction or enlightenment. Then serological methods, for which credit must be accorded to Lancefield (1928, 1933) and Griffith (1926–8), were introduced, and almost at once the dark places were illuminated. We now group the haemolytic streptococci by Lancefield's method and recognize an organism of group A as the *Streptococcus pyogenes*, the main cause of puerperal sepsis. By Griffith's technique we subdivide *Str. pyogenes* into more than a score of types, and so, not rarely, it is possible to trace to its source the streptococcus responsible for a case of sepsis.

In therapeutics, vaccines and antisera had their day; but only a few enthusiasts had faith in them, and both are now

*A paper read before the International Congress of Obstetricians and Gynaecologists, held in Dublin, July 7–11.

discarded. In 1935 came Domagk's "prontosil," to be followed hot-foot by the polyonymous sulphonamides. In 1929 Fleming discovered and described most of the properties of penicillin, but it was only after ten years that the greatness of his discovery was realized. It required the vision and persuasiveness of Florey and a world war to make available the first, and still the greatest, of the antibiotics.

In the field of prevention progress was steady if not spectacular. The application of Lister's antiseptic methods to midwifery ended for all time the major epidemics of puerperal fever characteristic of the practice of the Rotunda, as of other lying-in hospitals, in the eighteenth and the early nineteenth century. The combination of antisepsis and asepsis prevents the transfer of infection from patient to patient by the hands or instruments of doctor or nurse. But sporadic cases still occur and, much more rarely, small epidemics. Once the infectivity of puerperal sepsis had been realized the transfer of the causative organism from the uterus of one woman to that of another could be stopped relatively easily. Comparatively little effort yielded a large return, but puerperal sepsis did not cease to exist.

The uterus is a hollow viscus in relatively free communication with the exterior at a situation on the surface of the body where bacteria of various types abound. After childbirth it contains in its interior blood clot, an excellent nutrient for bacteria, and this is in contact, at the placental site, with underlying tissue temporarily deprived of the protective covering of epithelium. The uterus itself and the surrounding parts have recently suffered various insults incidental to the process of childbirth. The fire is set: only a spark is required to start a conflagration. Others who follow me will deal with the nature of the conflagration and how it may be extinguished. My concern is with the spark which may kindle the fire, its nature and source, and how it may be kept at a safe distance.

The most important cause of puerperal sepsis to-day is *Str. pyogenes*. There is little doubt that the same organism was responsible for the epidemics of the eighteenth and nineteenth centuries, but the sources have changed. Then the main source was the uterus of the septic patient. Other sources were septic wounds, sore throats, erysipelas, and impetigo. Transmission was accomplished, all too easily, by the unwashed hands of the doctor. Now conditions are entirely different. There are far fewer cases of puerperal sepsis to act as sources of infection, the obstetrician's hands are much less often contaminated with *Str. pyogenes* from other infections, and the barriers of washing, antiseptic lotions, and rubber gloves are interposed to prevent the transfer of the organism to the genital passages of the woman at the time of childbirth. When a group of cases occurs in a ward at intervals of a few days there is a presumption that the infection has been transferred from one to the other—not usually, it should be said, owing to a lack of cleanliness of the obstetrician's hands but to some less obvious break in the essential barrier between patient and patient. The ideal method of avoiding case-to-case transfer of infection is to provide a separate room for each woman admitted. The next best is prompt isolation of any woman on the first suspicion of sepsis: morbidity demands isolation. But there is a period, possibly only of hours, before sepsis suggests its presence by morbidity, and during this period *Str. pyogenes* is multiplying in and being discharged from the affected uterus. We cannot make a diagnosis of sepsis early enough to avoid all risk of spread, so we employ additional defences. These are isolation, as complete as local conditions permit, and the making over to each woman admitted of a set of all essentials of toilet and hygiene. The dangers of the communal bed-pan are lessened by disinfection: they are still further reduced if a bed-pan is reserved for each woman and if it is disinfected.

Limitation of vaginal examination, a strict ritual of hand and glove preparation, the wearing of gowns, and disinfection by steam of all instruments eliminate relatively easily the major risks of introducing streptococci into the birth canal.

At one time it seemed possible that puerperal sepsis would become extinct, but the curve showing its prevalence, which declined sharply as a result of the application of antiseptic and aseptic precautions to midwifery, failed to reach the zero line. There is a hard core of puerperal sepsis, and only by the greatest exertions can this hard core be reduced. An explanation of the sporadic case of puerperal sepsis which for a time appeared adequate was that the source of infection was endogenous—that is, that the *Str. pyogenes* was present in the vagina before the onset of labour and that from that situation it spread to the then highly vulnerable uterus after delivery. Some twenty-five years ago this seemed reasonably probable. Support for the theory was given by the finding of haemolytic streptococci in the flora of the vagina, both before and after labour, in from 3 to 6% of parturitions. But when our fumbling attempts to group haemolytic streptococci on the basis of fermentative capacities were replaced by surer serological methods and *Str. pyogenes* was accurately delimited, it was found that the haemolytic streptococci of the vagina were never, or practically never, of group A. The journey of that organism to the uterus is a longer one than from the adjacent vagina.

The proximity of the anus to the vulva suggested the possibility of infection of the uterus being derived from the faeces. This actually occurs, but not in the case of *Str. pyogenes*. This organism never gives rise to the carrier state in the intestine, and only very infrequently does it occur there as a pathogen.

Throat Carriers

We now know that the main reservoir of *Str. pyogenes* is the human throat. There it flourishes as a pathogen, producing scarlet fever or simple sore throat, and, still more commonly, there it lurks as a saprophyte on a mucous membrane which appears slightly, if at all, abnormal. The rate of throat carriers of *Str. pyogenes* varies greatly with time, population, place, and season, but a conservative estimate is that some 5% of a group of people harbour *Str. pyogenes* in their throats. Having traced the chief organism of puerperal and, indeed, of all types of sepsis to the not obviously abnormal throat, little imagination is required to picture its transfer to the uterus. Every time we cough or sneeze, shout or speak loudly, we spray out from our mouths and noses thousands of small droplets of saliva and mucus. If the sprayer is a throat carrier of streptococci these organisms leave his body in enormous numbers in the droplets. Good manners demand that, when coughing or sneezing, the hand or handkerchief be held before the face, and so the hand is contaminated directly from the droplets or indirectly from the handkerchief or the pocket into which it is put. It may be further contaminated by contact with objects on which droplets have fallen.

The hands of the doctor are, as we have seen, usually adequately prevented from becoming the transmitting agent of the streptococcus; but there are other hands, and especially there are the hands of the woman herself. If she is a throat carrier of *Str. pyogenes* her hands may very easily transfer the organism to her vulva; but even if she is not a carrier her hands may transfer the organism, picked up from the air, from bedding or clothing, or from some

other source. The other hands to be considered are those of the nurse. When carrying out treatment involving contact with the genital tract they should be, and presumably are, just as carefully prepared as are those of the doctor; but the nurse has many duties—dressing and washing the patient, making her bed, handling her bed-pan, and adjusting the vulval pad—and some of these involve either direct contact with the vulval region or contact with something which later makes such direct contact.

The hand has been dealt with first because it is the main vector of streptococci on their journey from the mouth and nose to the uterus, but transfer may occur in other ways. Few doctors or nurses sneeze upon the vulvae of their patients, and so direct transfer by droplets from throat to genital tract is rare, but direct transfer from throat to throat does occur. A carrier, whether patient, doctor, nurse, or visitor, may introduce *Str. pyogenes* into a ward, where it may establish itself in the throats of several inmates, each of whom constitutes a fresh focus of infection. Sooner or later droplets fall to the ground, the bed, or other surfaces, where they dry and enrich the dust with their streptococci. *Str. pyogenes* is usually considered to be a rather delicate organism, but when dried in dust it can survive for a period to be measured in weeks rather than days.

Droplets and Dust

The dangers of droplets and dust can be and should be reduced by the wearing of adequate masks and by the application of dust-controlling oils to floors and bedding. Only exceptionally should it be necessary to resort to disinfection of the air in a ward by ultra-violet radiation or, more simply and economically, by disinfecting mists. Valuable as these measures are, they come into operation at too late a stage. They seek to limit the diffusion of *Str. pyogenes*, but our aim should be to exclude that organism completely from our wards.

Each person regularly visiting a ward in a maternity hospital should have a throat swab examined for *Str. pyogenes* every week. If gentian violet blood agar is used it is possible, within 24 hours, to isolate streptococci from a throat and to identify those which are haemolytic even when very few are present. All found harbouring these organisms should be put off duty for 24 hours while the haemolytic streptococci are being grouped. If they are of group A—that is, if they are *Str. pyogenes*—the off-duty period should continue until in three consecutive daily examinations the throat is found to be free from that organism. If the streptococcus does not belong to group A the carrier presents but a slight danger and may be returned to duty.

This control should be applied to all members of the staff, whether doctor, nurse, or maid, whose duty takes them into a ward used for women before, during, or after labour. I fully realize how unpopular this would be and how liable it might be to disorganize the usual routine of a hospital; but a carrier of *Str. pyogenes* is such a menace that, in my opinion, eradication of puerperal sepsis will not be possible without it. Since there is an almost universal tendency to regard oneself as indispensable, efforts may be made to obtain a falsely negative result by various subterfuges, which must be rigorously guarded against. The duration of the carrier period may be greatly reduced by local application of a sulphonamide or penicillin. I do not advocate these substances for the prevention of the development of the carrier state.

Casual visitors, who should be reduced to a minimum, present a smaller problem, but still a problem. They should wear masks and gowns and should not be allowed to approach the patient too closely. I scarcely dare to advocate that, during the visit of the husband or mother of the patient, a glass screen should be interposed between her visitor and herself and that conversation should be conducted by microphone, but it would be a rash man who would say that such precautions will not ultimately be instituted.

What of the throat of the patient, which we have so far neglected? A *Str. pyogenes* of the same type has so often been found in the throat and septic uterus of a patient as to suggest that in such cases the uterus became infected from the throat. The alternatives that the throat was infected from the uterus or that both were infected from another person cannot, however, be overlooked.

Str. pyogenes in the throat of a woman at childbirth constitutes a danger to her own uterus and also to the uteri of other patients. That danger may be guarded against, in part, by bacteriological examination of throat swabs, but an obstetrical hospital is often an emergency hospital in that the patient is not always, or not even usually, admitted sufficiently long before labour to permit the bacteriologist to report whether she is a carrier of *Str. pyogenes* or not before delivery. The history of the Rotunda could furnish details of delivery occurring at every stage of the patient's journey from her home to the labour ward. The ideal arrangement is, as I have already stated, a separate room or cubicle for every patient. The second best is isolation, as complete as possible, from other patients of all new admissions until they have been found not to be carriers of *Str. pyogenes*. A patient found to be a throat carrier of *Str. pyogenes* should be isolated completely from all other patients and provided with her own nurses for as long as she is a carrier. Local treatment of her throat should be promptly instituted, and if she is still a carrier at the onset of labour her uterus should be safeguarded by systemic administration of penicillin.

The only other precaution to be considered is the general prophylactic use of chemotherapy. Sulphonamides have been used to some extent for this purpose, but the results have not been encouraging. Penicillin has not, so far as I am aware, been extensively reported upon as a prophylactic. I certainly would not advocate its routine use, but, if a case of puerperal sepsis should occur in a hospital, I believe that every woman admitted should receive systemic penicillin from the onset of labour until five days after delivery. I do not believe that the introduction of antiseptic substances into the vagina before or after delivery should be required for the prevention of puerperal sepsis due to *Str. pyogenes*. The advisability of such prophylactic methods as a guard against other organisms will be considered later.

Up to the present I have dealt with puerperal sepsis as if it were a specific disease like scarlet fever, due always to a haemolytic streptococcus of group A. I have done so because the epidemics of the past and the majority of cases of what I may call classical puerperal sepsis of to-day are due to this organism. But other bacteria must also be considered.

Let us deal first with those organisms so commonly found in the vagina ante partum as to constitute its normal bacterial flora. The most numerous of these are lactobacilli and anaerobic streptococci. It is probable that these came originally from the faeces, from which they may again be reintroduced from time to time, for they readily adapt themselves to the conditions present in the vagina. The lactobacilli may at once be exonerated. So far from being dangerous, by their powers of glycolysis leading to acid production they are highly beneficial commensals. The anaerobic streptococci are much less innocent and, indeed, present a special problem which will be considered later.

The richest bacterial flora of the body is found in the faeces, and the proximity of the anus to the vulva makes it obvious that the complete exclusion of faecal bacteria from the birth canal would be quite impossible. Coliform bacilli, so characteristic of the faeces, are but rarely found in the vagina ante partum. Their numbers increase somewhat post partum, but it seems clear that they are merely saprophytic in the lochia and are very rarely, if ever, the primary cause of puerperal sepsis, although by their presence they may have some enhancing effect on the virulence of other organisms.

Disease, and indeed disease of severe and often fatal type, may be produced by *Cl. welchii* and *Cl. tetani*. These organisms may be derived from the faeces, but, since their highly resistant spores have been found in cotton-wool and in sanitary pads prepared from it, an obvious alternative source of infection is available. Danger from this source must be guarded against by thoroughly efficient heat sterilization of cotton-wool used in connexion with midwifery. These clostridia have slight invasive power and present little danger provided there is no retention of lochia, no necrosis of tissue, and no extensive multiplication of other bacteria which might render conditions suitable for their development.

The faeces may be the source of many other bacteria sometimes to be found in the vagina ante partum and, in still larger numbers, post partum, but even in the post-partum uterus they have little if any pathogenic power—they are mere saprophytes.

It is curious that *Staphylococcus pyogenes*, such an important cause of sepsis elsewhere, is so rarely incriminated in puerperal sepsis. Cases of undoubted infection produced by it are recorded, but much less frequently than its ubiquity would suggest. Midwifery practice cannot ignore this organism, on account of its frequent association with sepsis of perineal lacerations and its marked tendency to cause thrombosis. Its reservoir is the nose, in which, as also on the skin and particularly the skin of the hands, the carrier condition is established. The wearing of adequate masks and of rubber gloves, and preparation of the hands, are probably adequate safeguards against it. *Staph. albus*, so slightly pathogenic as to be regarded as a saprophyte, may be found in the lochia but is not important.

Haemolytic streptococci, other than *Str. pyogenes*, which gave rise to so much confusion before the introduction of Lancefield's serological grouping, have quite often been isolated from the lochia of women who show no evidence of puerperal sepsis. Their pathogenic powers are much more feeble than those of group A streptococci, and in the uterus they usually behave as saprophytes. Occasionally, however, one or other gives rise to serious and even fatal sepsis. Streptococci of these groups show a marked tendency to spread from the uterus to the blood stream, causing fatal endocarditis. Streptococci of groups C and G, like those of group A, are unable to survive long in the vagina, and so in order to cause puerperal sepsis they must be introduced shortly before, during, or soon after delivery. The usual source of both is the human throat, for the organisms are harboured there in the carrier state or as causes of mild tonsillitis. Direct infection from the horse, in which group C organisms cause strangles, is improbable. Streptococci of groups B and D are occasionally found in the vagina, where they can apparently persist as saprophytes, and so have an easy route to the uterus after delivery. Direct infection of the uterus post partum by milk of cows suffering from bovine mastitis, which is caused by group B streptococci, is not a likely accident. Group D streptococci are commonly present in the faeces, from which methods of transfer to the uterus are obvious.

The measures suggested to reduce the dangers of infection by group A streptococci apply to exogenous infection by other haemolytic streptococci foreign to the vagina (C and G) and should prove adequate for the purpose.

Endogenous Infection

We are now left with the difficult problem of endogenous infection of the post-partum uterus by organisms of the vagina and particularly by anaerobic streptococci and by aerobic streptococci of groups B and D. Again I wish to emphasize the frequency with which these organisms are found in the uteri of women whose puerperium causes their obstetricians not a moment's anxiety. They are not commonly the cause of puerperal sepsis, and in the uterus they usually behave as saprophytes. Only in a small proportion of cases in which they are present in the uterus do they give rise to morbidity, and in only a small proportion of such cases do they actually cause sepsis. Of the two, the anaerobic streptococci are of much greater importance. They are, in fact, second only to *Str. pyogenes* as causative organisms of puerperal sepsis. They are rarely present in the lochia in pure culture in cases of sepsis, but are usually accompanied by other organisms, such as *Staph. albus* or diphtheroid bacilli, which, alone, are devoid of pathogenic power. It may be that the combination of one or more saprophytes with anaerobic streptococci endows the latter with abnormal pathogenicity. While the streptococci are endogenous the other bacteria are exogenous, and thus all the precautions which are effective in excluding bacteria from the genital tract should be of value in reducing sepsis due to endogenous anaerobic streptococci.

Prophylaxis by the application of antiseptic substances to the vagina has been fairly extensively, but not very critically, tried. I am somewhat prejudiced against this method, but some American experiences seem to show that it is of value, and it certainly appears to be safe. If any such application is to be made it should, in my opinion, be made before the onset of labour rather than after. In place of mercurochrome, which has been used for the purpose, I would advise a combination of penicillin, a sulphonamide, and proflavine. The first two are suggested because some of the organisms against which protection is sought are sensitive to one and some to the other. Proflavine is added to deal with bacteria resistant to both. The combination is unlikely to damage tissue and so open fresh portals to infection, but there is a danger that by inhibiting the growth of lactobacilli it may deprive the birth canal of a valuable means of protection.

I do not wish it to be thought that I am a strong advocate of this procedure, and I suggest its use only because we have no other method of protection against endogenous infection. If it is to be used at all, it should be so used as to demonstrate beyond doubt whether it is of value or not. This requires a large series of treated cases with an equal number of strictly parallel controls so as to yield statistically significant figures.

I have attempted to lay before you the essentials of the bacteriology of puerperal sepsis, and I have ventured to make recommendations which might, I believe, reduce still further the present satisfactorily low level of the disease. I propose to conclude with a warning. The continuation and extension of the precautions which have been so successful will in time make puerperal sepsis such a rare condition that obstetricians even of considerable experience will never have seen a case and will tend to regard it as a disease as extinct as cholera. It will then be very hard to maintain, day by day, month by month, and year by year, all the elaborate, time-consuming, and irritating precautions which we now know to be essential and which have given

us the victory, but which to the young obstetrician will appear but meaningless ritual. Then there will be a tendency, which it will be hard to resist, to relax some of the precautions, but so long as *Str. pyogenes* continues to exist in the throats of the people such relaxation will inevitably be followed by the reappearance of puerperal sepsis, the history of which is reflected in the history of the Rotunda Hospital.

PENICILLIN AND THE TREATMENT OF INFECTED HANDS IN OUT-PATIENTS

BY

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Penicillin is widely used in the treatment of the infected hand. It has been employed as a cream or powder for local application, and by direct injection into the theca in cases of suppurative tenosynovitis. In this review of cases treated at the Westminster Hospital it is our aim to assess the value of a method of administering systemic penicillin which can be used on out-patients. Only two of the patients treated with penicillin were admitted to hospital. This was from necessity rather than choice in the first instance, but later, when supplies of penicillin became available, out-patient treatment was deliberately adopted to save blocking hard-pressed bed space.

Eighty-five per cent. of all cases reviewed, and all cases receiving penicillin, were seen and treated by us throughout. In the remainder incision was done by casualty officers, but after-treatment was prescribed by us. This ensured uniformity for the purpose of assessment. The cases are considered under two groups: Group I consisted of 168 cases treated without systemic penicillin, and Group II of 17 cases treated with systemic penicillin. Within each group the following types of lesion are differentiated: (1) paronychia and pulp-space infections; (2) tenosynovitis; (3) palmar-space infections.

It is not feasible to give penicillin at four-hourly intervals to out-patients, and it was therefore hoped that a therapeutically adequate serum level might be maintained by two large doses, given morning and evening by intramuscular injections of aqueous solutions or beeswax–oil suspensions. The aqueous solutions produce high serum penicillin levels of brief duration, whereas the wax–oil suspensions produce a lower but more prolonged serum level and were found clinically to be more efficacious. No untoward effects, such as urticarial reactions or marked pain, were noted.

Diagnosis

(1) Pulp-space infections and paronychia were usually only too obvious, as the average duration of symptoms before the patient arrived at the surgery was six days.

(2) Tenosynovitis was diagnosed by the following criteria: swelling of the whole finger, which was held in a semi-flexed position; great tenderness on pressure over the tendon sheath; and severe pain on attempted passive extension.

(3) Palmar-space infection (middle and thenar spaces) was diagnosed by diffuse tenderness, convexity of the palm overlying the affected space, and gross dorsal oedema.

Treatment

Palmar-space infections were drained by incising into the web, passing a Spencer Wells forceps into the space, and inserting a corrugated rubber drain deep into the space, to be left in place for three days. In the tenosynovitis cases incision of the tendon sheath was not needed. When the inflammation was secondary to superficial infection the latter was drained by through-and-through incisions, with administration of systemic penicillin in Group II cases. When secondary to puncture wounds, penicillin only was used, without incision. Pulp-space infections were treated by bilateral incision with through-and-through drainage. In most cases of paronychia the entire nail was removed, as attempts to save part of it resulted in slower healing with a distorted nail and nail-bed.

The dressing applied at operation was changed after three days, when any drain was removed; the wound was then dressed with 17½% sodium sulphate and left for four days. Subsequent dressings, if required, were done at intervals of a further five to seven days. Soaking in hydrogen peroxide to facilitate removal of hardened dressings was reduced to a minimum. Some wounds were dressed with gentian violet, soda sulphate and acriflavine, "tulle gras," or penicillin cream, but the impression was that the medicament made little difference to the rate of healing. All septic hands were kept in a sling at least until the first dressing was done. Adequate analgesics were given on the first two to three days after incision, but, if incision had been adequate, little was needed after twenty-four hours. Most noticeable was the great relief of local pain on starting systemic penicillin. Patients were instructed to keep the dressings dry and undisturbed. This ideal could not be attained by all of them—for example, mothers of young children. Such patients were instructed to remove the wet sodden dressing and replace it with a clean piece of dry lint or gauze with no ointment of any kind. Otherwise all dressings were done separately from the rest of the surgery cases, with sterile dressings by a "clean" nurse. No patients were discharged until they were able to do full work with either no dressings at all or a dressing of such size that it would not interfere with their manual skill or render them liable to accident due to clumsiness because of the bandage—an important consideration, as many of these patients were skilled workers.

Results

An analysis of the 168 cases treated without penicillin is given in Table I. The period of unfitness for work is

TABLE I.—*Details of* 168 *Cases Treated Without Penicillin (Group I)*

Lesion	No. of Cases	Av. Duration of Symptoms before First Attendance (Days)	Day of Incision after Treatment Started				Average Time Unfit for Work (Days)
			Same Day	1st	2nd	3rd	
Paronychia and pulp-space infections ..	135	6·1	91 (67·4%)	23 (17%)	10 (7·4%)	11(8·2%)	21·0
Tenosynovitis	16	5·5	9 (56%)	5 (31%)	2 (13%)	—	17·5
Palmar-space infections	17	4·6	9 (53%)	4 (24%)	3 (17%)	1 (6%)	16·5

Average days unfit for work, 20·3.

calculated from the first hospital attendance till discharge. The shorter convalescence of the tenosynovitis and the palmar-space infection cases is explained by the fact that, though the lesions were more serious, it was possible to send a man back to work with a strip of "elastoplast" over his finger or palm when it would have been impossible with a dressing on his finger tip.

In the 17 cases in Group II two forms of penicillin were used—the ordinary water-soluble penicillin and a suspension of penicillin in beeswax and oil. Patients in bed were given intramuscular injections of 30,000 units of the former four-hourly. Out-patients were given massive doses, up to 300,000 units, of water-soluble penicillin morning and evening, or 100,000 to 150,000 units in beeswax and oil at similar intervals. Details are set out in Table II. These cases

TABLE II.—*Details of* 17 *Cases Treated With Penicillin (Group II)*

Case No.	Lesion	Days of Symptoms before First Attendance	Day of Incision after Treatment Started	Days Unfit for Duty	Treatment with Penicillin (Units)
1	Pulp infection or paronychia	5	Same day	10	7 × 300,000 W.S.
2	,,	5	,,	8	6 × 125,000 B.O.
3	,,	6	,,	7	8 × 150,000 B.O.
4	,,	4	1st	4	4 × 300,000 W.S.
5	,,	4	Same day	9	4 × 300,000 W.S.
6	,,	4	,,	8	300,000 W.S.; 3 × 150,000 B.O.
7	,,	6	,,	12	6 × 150,000 B.O.
8	Tenosynovitis	2	Not incised	3	1 × 500,000 B.O.
9	,,	3	,,	8	6 × 125,000 B.O.
10	,,	3	Same day	10	8 × 300,000 W.S.
11	,,	5	,,	8	4 × 300,000 W.S.
12	,,	1	Not incised	8	4 × 100,000 B.O.
13	,,	14	Same day	22	4 × 300,000 W.S. (b.d.) (bed 5 days)
14	Palmar-space infection	4	1st	12	6 × 200,000 W.S.
15	,,	2	Not incised	8	4 × 125,000 B.O.
16	,,	3	2nd	41	860,000 (30,000 4-hourly) (bed 5 days)
17	,,	5	Same day	8	4 × 150,000 B.O.

W.S. = water-soluble penicillin. B.O. = penicillin in beeswax and oil.

received treatment with penicillin because they were clinically more serious than those in Table I. In spite of this the duration of treatment was considerably shorter.

The three cases below are described, as they represent the two extremes in the duration of incapacity. Case 8 was able to return to duty only two days after receiving an unintentionally large dose of penicillin, while the other two patients were away from their work for 22 and 41 days respectively.

Case 8.—This was a nurse who two days previously had run a needle through her left index finger. When seen she had every sign of a severe suppurative tenosynovitis of the finger. By an error she received a dose of 500,000 units in beeswax at one injection—five times greater than intended. Twenty-four hours later every sign and symptom had completely disappeared, and two days later she returned to full duty.

Case 13.—This was the worst case of tenosynovitis seen in nine months. The patient was a soldier who had complained of symptoms suggestive of a pulp-space infection for a fortnight but had nevertheless been on full duty, including work as a porter at Billingsgate during a strike. He had been carrying crates of fish the night before he was sent to hospital with all the signs of suppurative tenosynovitis. He was ambulant and fit for discharge to light duty after five days in bed, but it was thought wiser to keep him in "protective custody" for a further seventeen days.

Case 16.—This patient had a severe palmar-space infection which was almost healed on discharge from hospital to the out-patients' department after five days. Contrary to advice, while still under treatment he returned to his work as a cook and dish-washer with the result that his wound became sodden and re-infected and his convalescence was prolonged to 41 days.

If Cases 13 and 16 are excluded the remaining fifteen cases give an average duration of days unfit for work as follows:

Type of Lesion	No. of Cases	Average Loss (Days)
Paronychia	7	9·9
Tenosynovitis	5	7·4
Palmar-space infection ..	3	9·3
Total	15	8·9

Notes concerning Serum Penicillin Levels obtainable with Wax–Oil Suspensions

Serial serum penicillin levels were estimated in one case (No. 13) following a single intramuscular injection of 150,000 units of penicillin in beeswax and oil; these are shown in the Chart. Estimations made at random on other cases conformed with this curve. In one case in which an estimation was made twelve hours after a single injection of 150,000 units the neat serum was found to have no inhibitory power. In a further case (No. 8) a single intramuscular dose of 500,000 units was given: no inhibition was detectable nineteen hours after injection.

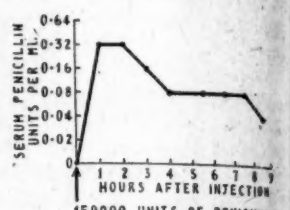

Chart showing serum penicillin levels following a single intramuscular dose of 150,000 units of penicillin in beeswax and oil.

It is clear from these few observations that a practically continuous level of penicillin, averaging only 0.08 unit per ml., can be maintained throughout the twenty-four hours by giving late evening and early morning doses of 150,000 units of penicillin in wax–oil suspension. It is to be noted, however, that the peak level obtainable with such a scheme is only 0.32 unit per ml. From the gratifying results achieved in the series of cases here reported it would appear that the need for higher peak levels has not arisen. But it is most necessary to remember that organisms only slightly more resistant than the Oxford staphylococcus would be quite unaffected by the levels obtained with this mode of treatment. Moreover, such levels do not provide a sufficient "head" for the penetration of necrotic tissue. For these reasons the use of wax–oil preparations should be abandoned if no response is apparent at the end of forty-eight hours. It should be noted that, clinically, nearly as good results were obtained with 300,000 units of penicillin in watery solution twice a day. Serum penicillin estimations were not made on cases so treated.

Commentary

Since the disability from a septic finger treated without penicillin lasts nearly as long as that ensuing in the average case of appendicitis any form of treatment that will appreciably reduce this time is justified. In the above series the period of disability has been reduced by 56%—from 20.3 days to 8.9 days. Though this series be small, it justifies in our opinion the use of penicillin in all severe or potentially severe cases of septic hands and in all cases needing incision. The dosage will vary with the clinical picture, but the minimum dosage should be 125,000 units of penicillin in oil or 300,000 units of water-soluble penicillin morning and evening for at least forty-eight hours. At the time these observations were begun it was impossible to carry out this as a routine owing to the shortage of penicillin in oil and the expense of massive doses of water-soluble penicillin.

As it is possible to treat these cases in the out-patients department there is a considerable saving in bed space as

well as in man-hours. Even better results would be obtainable if patients could be seen in the earlier stages of infection. Of the cases detailed in Table I, 65% needed immediate incision; in the three cases in Table II in which penicillin treatment was started less than three days after the onset of symptoms incision was unnecessary. This once again emphasizes the need for early diagnosis of the various infections of the hands and for appreciation of their serious nature.

Summary

A review is presented of 185 cases of infected hands seen in the surgery of Westminster Hospital—168 treated without, and 17 with, penicillin.

Cases treated without penicillin included 135 of paronychia and pulp-space infection, with an average loss of 21 days' duty; 16 cases of tenosynovitis, with an average loss of 17.5 days; and 17 cases of palmar-space infections, with an average loss of 16.5 days. The average loss of duty for these 168 cases was 20.3 days.

The penicillin-treated series comprised 7 cases of paronychia and pulp-space infection, with an average loss of 9.9 days' duty; 6 cases of tenosynovitis, with an average loss of 9.9 days (excluding Case 13, 7.4 days); and 4 cases of palmar-space infection, with an average loss of 17 days (excluding Case 16, 9.3 days). The average loss of duty in these 17 cases was 10.9 days. If the two unusual cases, Nos. 13 and 16, are excluded, the final average is reduced to 8.9 days—a saving of 56% compared with the non-penicillin series.

On the basis of these results it is suggested that the administration of penicillin in all severe infections of the hand, both in the early stages and after any necessary surgical intervention, should be adopted as a routine method of treatment.

In practice a dosage of 125,000 units in oil or 300,000 units in aqueous solution twice daily has been found adequate.

We are indebted to Mr. G. T. Mullally, Senior Surgeon, Westminster Hospital, whose enthusiasm and interest made this experiment possible; to Prof. R. J. V. Pulvertaft, who made penicillin in beeswax-oil available at a time when supplies were limited; and to the nursing staff of the surgery for their co-operation in carrying out treatment.

One of us (C. M. F.) is grateful to the Medical Director-General, Royal Navy, for permission to publish.

The President of the Medical Defence Union, Mr. St. J. D. Buxton, speaking at the Annual Meeting on Sept. 16, said that during the preparation by the General Medical Council of a Bill to amend the Medical Acts, representatives of the Medical Defence Union (together with those of the sister societies) had been received by the President of the G.M.C. and a subcommittee. Many of the recommendations made by the Union had been well received, but there was not agreement on all matters. In view of a clause in the Bill allowing appeal to a court from a decision by the G.M.C., the position of any member who had been defended by the Union was somewhat anomalous. In order that he should remain a member during the time allowed for decision as to whether an appeal should be lodged and during the hearing of such an appeal, the Articles of Association would be amended. Speaking of the National Health Service Act, he said that legal representation would be permitted on specified occasions, when practitioners were summoned regarding professional procedure and conduct. The Council periodically had to consider whether the Union could defend members against whom proceedings were being taken by patients in a matter not directly one of professional principle. Although the Council might wish to assist the member, the Union's Memorandum would not permit of the risk being covered by the Union. Hence it was recommended that members should take out a policy with a reputable insurance company to cover injury to patients, not connected with professional affairs, when on the practitioner's premises. Those who read the medico-legal matters in the medical and lay press would be aware of the importance of an action concerning assistants' agreements. He advised any members employing or seeking to employ an assistant, and all assistants who were members of the Union, to seek the Union's advice regarding the wording of the agreement, as the Council had obtained leading counsel's opinion and the Secretary was in a position to submit a suitable clause. With regard to swabs, it was noticeable that the retention of swabs in the pharynx after nose and throat operations had recently been more frequent than in the abdomen.

RELATION OF ABACTERIAL PYURIA TO REITER'S SYNDROME

BY

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Abacterial pyuria has been discussed in several recent papers. Its general features are now well recognized, but its aetiology remains obscure. Probably the most commonly held theory is that it is due to a virus infection.

That Reiter's syndrome might be associated with a sterile cystitis has been known from the first. Later, Colby (1944) described three cases with renal symptoms. His second case is of particular interest, since it demonstrates the development and final resolution of a hydronephrosis. This has often been noticed as a renal complication in abacterial pyuria. In addition one kidney was removed because it was thought to be tuberculous. Section of this kidney showed a thin parenchyma with a dilated pelvis and calices and numerous scattered haemorrhages, but no evidence of tuberculosis. Unfortunately a report of the microscopical appearance is not given, but so far as it goes the condition seems to be similar to that described by Donovan (Moore, 1943) in a similar case later proved to be abacterial pyuria. Cystoscopy in Colby's case showed a diffuse reddening of the bladder. No specific treatment was given and the condition cleared up, but there was a relapse four years later. Prostatitis was present in two of Colby's cases, and an abscess formed and discharged in one. Hollander *et al.* (1945) noted a residual prostatitis in four of his cases.

Joint effusions have been reported in several cases of abacterial pyuria lately. If the cases reported below had come under observation at a time when the urethritis and cystitis were present but before the arthritis developed they would undoubtedly have been classified as abacterial pyuria, not as Reiter's syndrome. It would appear that there is nothing to distinguish the sterile urethritis, cystitis, prostatitis, and pyelitis found in Reiter's syndrome from abacterial pyuria. It has repeatedly been stressed that all cases of abacterial pyuria respond to N.A.B. (Baines, 1947; Moore, 1943; Vassallo, 1946). I have found the same response, so far as the urinary symptoms are concerned, in those cases of Reiter's syndrome that I have treated with N.A.B. The joint lesions did not appear to be greatly affected, though they all cleared up more quickly than might have been expected, and no new lesions were seen after the completion of the N.A.B. treatment. No relapses have been seen up to the time they were lost sight of (six to nine months). In so variable a disease this observation is not of much value. It should be noted that Reiter found arsenic, in the preparation used by him, ineffective, as also have some other workers. The failure of the joints to respond was not unexpected, and finds a parallel in the effect of arsenic on the genital tract lesions of abacterial pyuria.

I have suggested elsewhere (Baines, 1947) that abacterial pyuria is a coital, if not a venereal, disease. Vassallo (1946) came to the same conclusion. He assumed that the urethritis and cystitis were parts of an ascending infection. I have gone further and suggested that the whole urinary and genital tract may be infected by an organism gaining entrance through the urethra. It seems possible that the other symptoms seen in Reiter's syndrome may be a further extension of the same process. In the investigation into abacterial pyuria mentioned above it was thought that there was a characteristic cystoscopic picture in this condition. Two of the cases reported below underwent cystoscopic

examination in the acute stage and the findings were exactly similar to those seen in abacterial pyuria.

Lever and Crawford (1944) pointed out that the whole triad of Reiter's syndrome is not always present. This may be due to the urethritis or conjunctivitis not being severe enough to attract the patient's attention. Careful questioning will sometimes elicit a positive history that is not obtained by casual inquiry. However, at the present time many cases of large-joint arthritis of febrile non-rheumatic type are being seen in hospital and no cause found for them. So common were these in one military hospital that a special investigation was set on foot, the results of which are to be published elsewhere (G. Hearn and C. Tinker—personal communication). It is possible that some of these really belong to the same group.

I have not had the opportunity of examining large numbers of women, but the condition appears to be unknown in them. Hollander stresses the fact that although large groups of women were living under the same Service conditions as the men, he did not see a single female case. No undoubted case is reported in the literature. Dienes and Smith's (1942) series of women investigated for L organisms contained some with genito-urinary infections of a non-specific type associated with arthritis. This heavy preponderance of men is also seen in abacterial pyuria. This is a matter of some importance. If the view of the coital nature of the infection in both these diseases is upheld the organism should be found in both male and female tracts. It is possible that it is a normal inhabitant or common infector of the female, who is relatively immune to it. Urethritis in the female commonly goes unnoticed. Further investigation of the apparently minor lesions of the female genital and urinary tract would be interesting, though it is unlikely to progress far until a specific organism can be isolated. Women with arthritis should probably have a more detailed search made for associated lesions.

Aetiology of Reiter's Syndrome

Reiter himself attributed the condition to *Spirochaeta forans*. This has been a persistent suggestion, but there has never been any further evidence in favour of it.

More recently it has been suggested that it is due to a virus-like organism. This is probably based on Collier's (1938) work. He found a spontaneous transmissible arthritis in *Rattus norvegicus*, and was able to isolate inclusion bodies from them. He was also able to produce a similar disease in rats by injecting fluid from the joints or blood from a case of human acute rheumatism. This work was confirmed by Beeuwkes and Collier (1942), who gave warning that the results should be regarded with caution until similar inclusion bodies could be demonstrated in humans without transmission through rats, since spontaneous virus disease is very common in these animals. Findlay and co-workers (1939) confirmed these results and were able to show that the organisms resembled the virus of pleuropneumonia. Preston (1942) agreed with this, and incidentally pointed out that the reaction was a pyogenic one resembling human pyogenic arthritis rather than rheumatoid arthritis. Abscesses were sometimes found throughout the body of experimental animals, especially at the site of needling for injection purposes. This is of special interest, since one of the objections raised to a virus aetiology for Reiter's syndrome and abacterial pyuria is the fact that they are essentially purulent diseases; whereas virus diseases are not commonly so. Dienes (1940) and Dienes and Smith (1942) isolated pleuropneumonia-like organisms (L organisms) from the cervical, vaginal, and urethral secretions of women, and from the urethra and prostatic secretions of men. Some of these women had gonorrhoea, non-specific infections, or arthritis, but some appeared to be normal. All the men had symptoms of prostatitis. Beveridge (1943) found L organisms in four out of 24 cases of non-specific urethritis. Klieneberger-Nobel (1945) found L organisms in 40% of patients under treatment for venereal diseases, 33% of patients attending with non-venereal gynaecological conditions, and in only 14% of normal ante-partum women. Salaman and others (1946) found L organisms in 6% of normal women and 14% of normal men. The incidence was no higher in men with non-specific urethritis, but was 44% in women with non-specific cervicitis, possibly due to the greater difficulty in excluding gonorrhoea in women. If there was associated gonorrhoea (or *Trichomonas* infection) the incidence rose to 34% in men and 60% in women. If both gonorrhoea and *Trichomonas* were present it was 100%.

This fits in very well with the findings of Dienes and Smith (1942) quoted above, and of Coutts (1942). Denfield's (1946) observations in Nigeria may be of some interest in this connexion. He regards Reiter's syndrome as an allergic reaction to repeated attacks of gonorrhoea. It seems more probable that there is some sort of commensalism and that the L organisms (if indeed they have anything to do with the disease) grow more freely in the presence of other organisms.

It is perhaps permissible to speculate somewhat at this point. In my paper on abacterial pyuria I came to the conclusion that it was almost certainly acquired by coitus, though not necessarily by extramarital infection. This was based on the almost constant history of recent intercourse, both marital and otherwise, in a series of cases occurring in an army stationed abroad. Urethritis was found in almost every case, though it varied from frankly gonococcal, through post-gonococcal and non-specific ones, to a mild mucoid discharge. In some cases there was no shred of evidence that there had ever been any extramarital intercourse, and the urethritis developed after a home leave. One was driven to the conclusion that infection might be due to a normal inhabitant of the vagina. These cases were by no means common compared with those that were frankly venereal. This parallels the state of affairs found by Salaman (1946) and by Klieneberger and Smiles (1942), with L organisms present in about 10% of normal women and about 60% of those with gonorrhoea. Kristjansen's (1930) case is of some interest in this connexion. His patient developed a non-specific urethritis and arthritis a week after intercourse with a girl known to have a vaginal discharge, which was repeatedly found to be negative for gonorrhoea. Another man subsequently developed urethritis without arthritis following intercourse with her. There is thus a recurrent suggestion that there is some vague connexion with gonorrhoea; but that cases do occur without it is not to be doubted. In this the clinical and pathological findings agree. Salaman has made the alternative suggestion that L organisms are stages in the life cycle of the gonococcus.

In view of the suggested mode of infection another organism which must be considered is *Trichomonas vaginalis*. This was strongly pressed as a likely cause of abacterial pyuria by Lydon (1945), but other workers have failed to find it in this condition, nor are the symptoms the usual ones of known *Trichomonas* infection in the male. Incidentally this organism does not usually respond to N.A.B. It is more probable that *Trichomonas*, when present, is a co-infector. Its relation to L organisms is mentioned above.

One other organism has been mentioned. Coutts (1947) attributes Reiter's syndrome to the virus of lymphogranuloma venereum, and states that he found positive

Frei tests in the condition. In the majority of his cases there was an associated gonococcal urethritis. As Coutts (1943) points out, double infections are not uncommon in venereology, and it is possible that yet another organism was acquired at the same time as his two other common infectors. He also found a similar condition in women (Coutts, 1944), and in the so-called Behcet's syndrome. Frei tests are not infrequently reported as positive in Reiter's syndrome. This may be due to the fact that it is probably not entirely specific for lymphogranuloma. Some of the viruses of atypical pneumonia, and possibly psittacosis, appear to have antigenic affinity with that of lymphogranuloma (Sargent, 1945).

Case I

The patient, a male aged 40, five years previously developed a non-gonococcal urethritis one month after exposure. This responded to sulphonamides. Shortly afterwards he had a dry pleurisy which lasted only a fortnight. He remained well for two years, until he again developed pleurisy. This cleared in six weeks, but twice relapsed at intervals of a month. Full investigation revealed no cause for this. Shortly afterwards he had a recurrence of his urethritis, and at the same time developed a painful arthritis of his left knee. Tuberculosis was suspected. *X*-ray examination revealed an area of translucency at the upper end of the tibia which was not thought to be responsible, and the nature of which was not known. Lymph-gland biopsy was carried out and showed only "chronic inflammatory change." Guinea-pig inoculation with gland extract was negative. He also had a mild conjunctivitis at this time. Both this and the urethritis cleared up and the knee settled completely in about three months.

He had no further trouble until two weeks before his present admission, when his discharge recurred. Ten days later he developed a bilateral conjunctivitis and arthritis of the left shoulder and ankle and right elbow. Most of the inflammation was periarticular. There was some frequency of micturition and occasional "stammering" but no pain.

Investigations.—Urethral discharge and prostatic bead: pus ++++; no gonococci; Gram-positive cocci; culture of *Staphylococcus albus*. Midstream urine: normal; dark-ground, no spirochaetes. Swab from eye: diphtheroids. Blood count: normal. E.S.R.: 29 mm. in 1 hour. Serum agglutinations for dysentery: negative. *X*-ray examination of joints revealed nothing abnormal. Cystoscopy: the bladder contained a large amount of pus which, in the absence of any sign of inflammation and a clear efflux from both ureters, must have come from the posterior urethra, which was markedly inflamed.

Once again the condition settled down without specific treatment, and at the end of a month he was nearly normal.

Comment.—This appears to be a classical case of Reiter's syndrome following on a non-specific urethritis. There have been three relapses in five years, with complete recovery on each occasion. The association of pleurisy may be of interest. It has not previously been reported as part of the syndrome, and may in fact have nothing to do with it. I have seen one other case in which a severe fibrinous pleurisy with marked *x*-ray changes was associated with a very acute abacterial pyuria. Further observations are required.

Case II

A man aged 25, with a healthy history; no dysentery. Six weeks before admission he developed a watery discharge after several extramarital exposures. This was non-gonococcal (smears and culture), and cleared up with sulphonamides. Two weeks later he began to have haematuria, dysuria, and frequency (D/N=30/20). A fortnight before admission he developed bilateral conjunctivitis, and four days later his left ankle became swollen. During the following week the other ankle and both knees were involved.

On admission he had a mild conjunctivitis, and a peri- and intra-articular arthritis of the joints mentioned. Rectal examination showed a tender boggy prostate. Urethral smears were repeatedly negative for gonococci, but contained a lot of organisms and grew staphylococci and *Ps. pyocyanea* on culture. Urine: pus ++++; culture sterile. Cystoscopy: fluffy oedematous cystitis with multiple discrete ulcers closely resembling those seen in abacterial pyuria. The gonococcal flocculation test and Wassermann reaction were negative, as was the Frei test. Stools and agglutinations were negative for dysentery. The blood count was normal, and the E.S.R. was 18 mm. in 1 hour.

He was treated with penicillin, 1,000,000 units, and sulphathiazole, 30 g., without effect. He was then given N.A.B., 0.3 g., three doses at four-day intervals. Improvement in the urinary symptoms was rapid, and he was normal by the tenth day. There was a slight flare-up of the joints after the second injection, and at this time the E.S.R. was 30 mm. in 1 hour. From this time improvement was rapid and he was able to get up in a fortnight, being discharged a few days later. Cystoscopy sixteen days after N.A.B. was started showed a dramatic change in the bladder, which was now normal apart from slight congestion of the vessels.

Comment.—The urinary picture is that of abacterial pyuria, and is associated with conjunctivitis and arthritis. The joints were responding to rest, but the urinary lesions were untouched till N.A.B. was given, when the expected dramatic response was found. Thereafter the joints rapidly settled. It is not possible to say if the N.A.B. had any effect on the joints since they vary so much spontaneously. The flora of the urethra was not regarded as being of much importance in view of the sterile urine and characteristic cystoscopic findings.

Case III

Two months previously the patient, a man aged 22, had been treated with penicillin for acute gonorrhoea. The urethritis never cleared and he began to have haematuria, dysuria, and frequency of micturition. He was given a course of sulphathiazole, which stopped his discharge, but this recurred a week before admission. Four days later his shoulder swelled and became painful. Two days after this the left knee was also involved.

On admission he had an irregular temperature of 100°–103° F. (37.8°–39.4° C.). There was a mixed intra- and extra-articular arthritis of the shoulder and knee. The leucocytes numbered 17,000; E.S.R. 30 mm. in 1 hour. Urine: pus ++++; culture sterile. Repeated urethral smears were negative for gonococci. Mild conjunctivitis appeared on the following day; this lasted for four days, but recurred three weeks later and again disappeared. During the succeeding days various other joints were involved. The pain and swelling flitted from one to the other and recurred.

Cystoscopy showed severe patchy cystitis—parts of the apex and lateral walls being clear—maximal round the ureteric orifices; multiple plum-coloured small ulcers; the general appearance being one of pink fluffiness characteristic of abacterial pyuria. In view of this he was treated with N.A.B. in the usual way. The urinary symptoms cleared up within a week.

The E.S.R. rose to 95 mm. in 1 hour on the eighteenth day and thereafter fell. His joints slowly recovered, and he was able to get up at the end of two months, being discharged a month later.

During the course of his illness he had three attacks of nose-bleeding. It is possible that these were due to involvement of the nasal mucosa, but no ulceration could be seen in the nares.

Comment.—This case was actually the first one seen. The patient was examined at a time when abacterial pyuria was being investigated, and it was clear that so far as his urinary lesion was concerned there was no difference from the other cases we were seeing. (The original presence of gonorrhoea we regard as of no importance, since it is a not uncommon co-infector in cases of abacterial pyuria. The reasons for thinking that this is so are given in full in the paper (Baines, 1947) on this subject.) This is why we started treating these cases with N.A.B. in spite of the

bad reports from the earlier workers. We found that the urinary lesions clear up in Reiter's syndrome, just as they do in abacterial pyuria. It is difficult to assess the effect on the joints, since these are so variable in any case, but we are inclined to think that, at any rate, no further involvement occurs after the use of N.A.B. An adequate opinion cannot be given until much further trial has been made. One wonders whether the joints may not be an allergic reaction to the primary urethral infection. The effect of N.A.B. on the urethral lesion is in any case obscure (in contrast to the effect on the bladder).

Case IV

A man aged 43 had been treated with penicillin for "urethritis" six weeks previously. Since the dose given was not the standard dose for gonorrhoea it is probable that a firm diagnosis was not made. The urethritis cleared up but relapsed a few weeks later, and at this time he had a mild conjunctivitis which lasted about a week. Shortly after this he began to have painful and frequent micturition. Within a few days he developed an arthritis of his left knee. During the next ten days various other joints became involved, including the right knee, ankles, big toe, shoulder, elbow, and spine.

On admission he was febrile—100°–101° F. (37.8°–38.3° C.) and in great pain. All the accessible joints had the same appearance, being hot, tender, and with intra- and extra-articular swelling. Urine: pus +++; culture sterile. Repeated urethral smears and prostatic beads were negative for gonorrhoea. The gonococcal flocculation test and Wassermann reaction were negative.

In view of the possibility of gonorrhoea, even in the absence of any positive findings (but after primary penicillin), he was given 1,000,000 units of penicillin and 30 g. of sulphathiazole concurrently. This had not the slightest effect. His urethritis and haematuria got worse. The joints varied from day to day. He then had a course of N.A.B. The urinary lesions cleared up in a few days and did not relapse. The joints continued to vary but improved slowly from this time, and he was able to get up in six weeks. When discharged to light duty a month later there was still some residual stiffness, and a little thickening round the ankles. A skiagram of the big toe showed a destructive arthritis of the metatarso-phalangeal joint; the other joints were normal.

Comment.—This case is somewhat similar to the previous one. It is obviously not absolutely possible to rule out gonorrhoea, but we do not regard this as essential. The presence of abacterial lesions responding to N.A.B. makes it pretty certain that even if gonorrhoea was originally present it was a dual infection. It certainly illustrates the difficulties of diagnosis. However, the remarkable recovery of these cases suggests that the condition is not gonorrhoeal in origin.

Case V

This patient, a man aged 26, had had a non-gonococcal urethritis and epididymitis three months before admission. Two weeks before admission he had a sore throat, and 12 days later he developed a mixed peri- and intra-articular arthritis of both knees and one ankle. There was a mild irregular fever. The urine was normal, and prostatic bead, W.R., and G.F.T. were all negative. E.S.R., 36 mm. in 1 hour. With rest in bed there was some improvement, but a week later he had an acute flare-up with pyrexia to 101° F. (38.3° C.). The leucocytes numbered 8,900. E.S.R., 80 mm. The joints continued to vary, the arthritis flitting from one to another and also involving the shoulder. The E.S.R. slowly sank. Since resolution seemed to be very slow he was given a course of N.A.B. After this the temperature remained steady, and the E.S.R. fell to 8 mm. Convalescence was uninterrupted.

Comment.—This case is probably not one of Reiter's syndrome. It is included to illustrate the difficulty in knowing what should be classed under this heading, and as an illustrative case of a type now common. The arthritic lesions were typical enough of the variety seen in Reiter's syndrome, and it followed a non-specific urethral infection. Conjunctivitis was not seen, but this is often absent. N.A.B. was given to discover if it could be used in any way as a therapeutic test; but it was impossible to say what effect, if any, it had in this case. Certainly the condition settled rapidly after it had been given, but it was already beginning to do so before treatment was started. Until some specific test is evolved or an organism found, this difficulty will continue. All that one can hope is that in queer cases of arthritis the diagnosis will be considered and adequate investigations be made.

Summary

Reiter's syndrome is a convenient diagnosis for cases of arthritis associated with lesions of the mucosal surfaces. Whether it is a single and real entity will not be proved till a causative organism can be identified and Koch's postulates fulfilled.

There is enough evidence to show that it is neither gonococcal nor dysenteric in origin. The reasons for regarding it as being due to a virus are attractive, but at the moment there is little real evidence on this point.

I have tried to show that there is some reason for believing that the primary lesion is probably urethral. The importance of this has not been adequately stressed in the past. There is no apparent difference between the genito-urinary lesions of Reiter's syndrome and those of abacterial pyuria. It has been suggested that the latter is sometimes associated with other lesions of the genital tract, and this may be but another facet of a widely invasive disease.

Treatment is most unsatisfactory. It is exceedingly difficult to assess. The only thing which seems certain is that the urinary lesions when present in the florid state clear up with N.A.B. just as they do in abacterial pyuria. How far this affects the joints is open to doubt, and we must await the passage of time and a careful follow-up of many cases. It has been condemned in the past.

It is perhaps worth calling attention to the not uncommon cases which resemble Reiter's in one or more respects but can hardly be included with certainty. Many of these are associated with non-specific lesions of the genito-urinary tract. Too frequently it has been assumed that these are all gonococcal. This is probably not true, and they should repay a more careful study. Certainly the urethra and prostate must be searched in every doubtful case of arthritis. Greater knowledge will surely follow better investigation.

I am greatly indebted to Prof. A. P. Thompson for permission to use Cases I and II, which were under his care; also to his residents, Drs. Hayward and Fisher, who undertook most of the tests and investigations in these two cases.

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PHOTOSENSITIVITY TO SUNLIGHT FROM USE OF PROPHYLACTIC SULPHONAMIDES

ITS RELATION TO VACCINATION REACTIONS

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On an R.A.F. station during April and May an outbreak of streptococcal tonsillitis occurred, 65 cases being admitted to the isolation block in a period of 61 days. In the same period 7 cases of rheumatic fever developed, apparently as a sequel to a preceding throat infection. In an attempt to control the epidemic it was decided to administer prophylactic sulphanilamide tablets to a body of men exposed to the infection and to compare the incidence of infection in those receiving the drug with the incidence in those untreated.

The drug appeared to control the epidemic, for in the period of prophylactic therapy the cases occurring in comparable numbers of treated and untreated personnel were reduced to one-third in treated cases, and remained at eight-ninths of the previous admissions in those unprotected. The treatment, however, produced a high incidence of toxic effects, shown by transient photosensitivity rashes occurring only in personnel who had recently been vaccinated and coinciding with the development of the pustular stage of the vaccination lesion.

Clinical Observations

The personnel studied comprised a training wing of a Royal Air Force unit. They received prophylactic sulphanilamide tablets in a dosage of 2 g. daily; in all 470 men were treated. While under training routine vaccination was performed, T.A.B. inoculation being no longer undertaken as a routine. The majority of the men received the tablets for 10 days (total 20 g.), when because of the high incidence of rashes the treatment was suspended. All men under treatment were questioned individually as to their regularity in taking the tablets and were asked if they had previously received sulphonamides orally or locally; they were also examined for rashes and the state of their vaccination lesions was noted. No history of previous sulphonamide therapy was obtained in any of the cases, while a few of the men admitted to taking less than 5 g. of the drug. Two such cases developed rashes at the height of their vaccination reactions.

Environment, diet, the effects of vaccination alone, and other factors which might have contributed to production of the rashes were excluded by a study of a large control body of men on the station subjected to identical living and training conditions in whom no rashes occurred. These controls comprised approximately 2,250 men not receiving prophylactic sulphanilamide and not recently vaccinated, and 1,500 not receiving sulphanilamide but recently vaccinated.

Rashes Encountered

The development of the rash coincided in all cases with the development of the pustular stage of the vaccination lesion and occurred exclusively in areas exposed to sunlight. The cases, owing to standard Service dress, showed a striking similarity in the areas involved. These consisted of the head and neck except a small V-shaped area on the forehead shaded by the forage cap; the arms and forearms unprotected by rolled-up sleeves; and, in a few cases, a small band round the ankles where the sunlight had penetrated the gaiters. A few men had sunbathed during the period of administration and had developed more extensive rashes in the areas exposed.

The rash consisted of small dusky-red papules on a dusky erythema, which in severe cases coalesced into a confluent large macular lesion. Severe cases developed a marked conjunctivitis with or without oedema of the eyelids. In four cases areas of small vesicles developed. The rash faded in less than a week, leaving brownish desquamating areas. The rash was intensely pruritic.

Rashes developed in 136 (34.6%) of the 470 personnel treated, a much higher incidence than reported by previous workers. The high proportion of rashes, we submit, is due to the combination of three factors—the sulphanilamide, excessive sunlight, and associated vaccination reactions.

The cases affected have been divided into three grades of severity: by "severe" rash is meant a confluent macular lesion on head, neck, and arms, associated with conjunctivitis, with or without oedema of the eyelids, fever, and constitutional disturbance; by "moderate" is meant a maculo-papular lesion involving the same areas but unassociated with fever and constitutional disturbance; and by "mild" is meant a small localized papular and erythematous lesion without general reaction. Of the 136 rashes 23 were severe, 43 moderate, and 70 mild.

Relation to Vaccination Reactions

The 470 cases receiving prophylactic sulphanilamide were divided into four groups showing decreasing incidence of rashes; they varied only in the time at which vaccination was performed. All cases received 10 days' sulphanilamide, and were divided as follows:

Group A.—In this group 213 men received sulphanilamide from the first to the tenth day after vaccination—i.e., *when the reaction was developing.* An explosive outbreak of 106 (49.3%) rashes occurred on the tenth day, coinciding with the development of the pustular stage of the vaccination lesion. Of these rashes 20 were severe, 35 moderate, and 51 mild. The degree of rash appeared to be directly related to the severity of the vaccination reaction.

Group B.—This group consisted of 99 men who were vaccinated after receiving prophylactic tablets for eight days, the tablets being suspended two days later—i.e., *when vaccination reactions developed eight days after the treatment was suspended.* Despite the suspension of the tablets 26 rashes developed (26.3%), again coinciding with the development of the pustular stage of the vaccination lesion. Of these rashes 3 were severe, 8 moderate, and 15 mild.

Group C.—This contained 87 men who received prophylactic sulphanilamide from the fifteenth to the twenty-fourth day after vaccination—i.e., *when the vaccination reaction had subsided.* A much lower incidence of rashes was encountered, only four (4.6%) mild rashes developing. In all these cases it was found that the vaccination pustule was still unhealed; no rashes occurred where the lesion had become inactive.

Group D.—Ten days' prophylactic sulphanilamide was given to 71 men who had *either refused vaccination or in whom the vaccination had failed.* No rashes occurred in this group—stressing that in the absence of vaccination toxic effects would have been minimal.

These results are summarized in the Table.

Discussion

Many observations concerning the prophylactic use of sulphonamides in the control of rheumatic fever, meningitis, and streptococcal and other infections are on record, these

Table of Results

Description of Cases	No. of Cases	Vaccinated	Rashes Developing	Incidence	Degree of Rash		
					Severe	Moderate	Mild
Group A	213	Day after starting tablets	106	49·8%	20	35	51
Group B	99	2 days before tablets suspended	26	26·3%	3		15
Group C	87	15 days before receiving tablets	4	4·6%	—	—	4
Group D	71	Failed or refused	Nil	Nil	—	—	—
Total ..	470	—	136	34·6%	23	43	70

drugs being effective protective agents and having been administered to large numbers of men with minimal toxic effects. Thus Coburn (1944) in the control of streptococcal infections administered sulphadiazine in doses of 1 g. daily for several weeks to some 250,000 personnel of a naval establishment. Mild evanescent drug rashes occurred in 0.2–0.7% of cases, necessitating suspension of the therapy in 0.3%. The rashes developed after two to three weeks' administration of the drug, when 7–20 g. had been given. Severe drug rashes occurred in 0.005%.

Similar figures are reported by Holbrook (1944), who administered daily 1-g. doses of sulphadiazine to 40,000 troops with only 33 rashes (0.08%). Lee (1944) reviewed reactions following the mass administration of a single 2-g. dose of sulphadiazine to 25,000 men and women, in whom 128 reactions developed, fifteen being classified as mild cutaneous rashes and four as severe cutaneous eruptions. Other workers dealing with the use of prophylactic sulphonamides quote an incidence of skin lesions of 0.03% in 18,000 men who received 4 g. of sulphadiazine in one day (Painton, 1944) and a 0.38% incidence of toxic effects, nature unspecified, in 9,000 men of the A.A.F. who received 3-g. doses of sulphadiazine twice weekly (Warren, 1944). The most recent series, that of Billow and Albin (1946), quotes an incidence of 63 rashes in 20,000 troops receiving daily doses of 1 g. of sulphadiazine (0.32%).

Our incidence of rashes (34.6%), therefore, was very much greater than ever previously reported in the use of prophylactic sulphonamides, the higher incidence, we submit, being due to a coincidence of the drug's administration and vaccination. In a search through the literature we could find no reference to this relationship.

The personnel receiving the therapy were divided into four groups according to their relation to the time of vaccination. The first group developed their vaccination reactions while the drug was being administered and showed the highest incidence of rashes (49.8%). The second group, in whom pustular vaccination lesions developed some eight days after the drug had been suspended, surprisingly developed rashes in a large percentage (26.3%). In this group the latent period between the suspension of the drug and the development of the rash was therefore much longer than previously reported, among others by Erskine (1942) and Park and Platts (1942), who described photosensitization rashes developing 48 hours after the drug had been suspended. In the third group, in whom vaccination reactions had subsided, four (4.6%) rashes occurred only in cases where the vaccination pustule remained unhealed. No rashes were present in a fourth group of 71 men in whom vaccination had failed or had been refused. It would appear, therefore, that a toxin eliminated from the vaccination pustule combined with the sulphonamide had acted as a powerful photosensitizer.

The rashes encountered conformed to descriptions given by other workers. Photosensitivity in sulphonamide therapy was described first by Goodman and Levy (1937) and Ballenger *et al.* (1937) among others. Park and Platts (1942) recorded 27 cases, and Peterkin (1945), in a review of 500 sulphonamide rashes seen in North Africa and Italy, classified 361 (72.2%) as light-sensitization rashes. He described four types of light-sensitization rash—erythemato-papular, vesicular, severe (which showed bullae, crusting, and oedema), and telangiectatic. In his series the severe type was the most common, comprising 61.8% of the total rashes. In the present series all but four cases were of the erythemato-papular type, the remainder being vesicular. The presence of conjunctivitis sometimes associated with oedema of the lids was mentioned by Lee (1944) in his description of rashes occurring in his series. These symptoms appeared in all our severe cases. The conjunctivitis combined with a rash suggested rubella in some of our more diffuse cases, this point of differential diagnosis being described also by Billow and Albin (1946). Peterkin (1945) in his discussion on photosensitivity stated that duration of sensitivity may vary between forty-eight hours and two and a half years. He also stated that patch-testing gave erratic results, tending to be positive only in areas affected by the rash. In none of our cases did the rash recur on further exposure to sunlight, and patch-testing, both in areas affected and in those unaffected by the rash, gave uniformly negative results in 30 of the severer cases, stressing that the lesion was a transient photosensitivity rather than a true sulphonamide dermatitis.

Opinions vary whether any one sulphonamide compound is more prone to reactions. Erskine (1942) considered the incidence of toxic effects to be equal in the various compounds employed. In the 27 cases recorded by Park and Platts (1942) 21 were due to sulphanilamide. Peterkin (1945) considered sulphanilamide most likely to cause reactions, and attributed this fact to its wider use as a local application. Sulphanilamide was used in the present series in the interests of economy, and, although the dosage was heavier than that employed by some workers, it in no way exceeded the dosage used by Thomas (1944) in the prophylaxis of recurrences of rheumatic fever over a period of seven years. Aberrations of chemical constitution in the drug which might have contributed to the toxic effects were excluded by analysis kindly performed on tablets of the same batch by Messrs. Boots Pure Drug Co.

Three hypotheses have been advanced concerning the mechanism of sulphonamide photosensitivity. The phenomena of sensitization due to previous oral or local administration have been long recognized, but no history of previous therapy could be elicited in any of our cases. Secondly, Rimington and Hemmings (1938) found that an increased output of porphyrins occurred in sulphanilamide therapy together with coproporphyrin I, which is a photosensitizer. The amount excreted varied considerably in individuals and contributed to their proneness to toxic reactions. Facilities for the estimation of the urinary output of porphyrins were unfortunately not available, and no further observations could be made on this point. Our work would seem to support a third hypothesis put forward by Erskine (1939), who considered that drug reactions are due to the liberation by the drug of toxins from a buried toxic focus. In our series the vaccination pustule may have acted as an inflammatory focus from which toxins were liberated by the sulphonamide, causing photosensitivity.

There would seem, therefore, a considerable risk of light-sensitization rashes if sulphonamides are administered, even in small dosage, in the presence of an active vaccination pustule, and their use in recently vaccinated ambulatory personnel is not advocated. Fortunately all the rashes developing were evanescent; but true sulphonamide sen

tivity remained a possibility, and subjects with rashes were advised to warn doctors in the future of the possibility of their being sensitized. The mechanism of the phenomena is obscure, the drug, the vaccination lesion, and light all playing a part.

Summary

In the control of streptococcal infections in an R.A.F. station prophylactic sulphonamides were administered in a dosage of 2 g. daily for ten days to 470 personnel.

A high incidence (34.6%) of photosensitization rashes occurred, due to a combination of three factors—the sun, vaccination, and sulphanilamide.

The highest incidence of rashes was found in men recently vaccinated, and coincided with the development of the pustular stage even when this occurred after the drug had been suspended. No rashes appeared in personnel in whom vaccination had failed or was refused.

The literature relating to toxic reactions occurring in the use of prophylactic sulphonamides and to sulphonamide photosensitivity is discussed.

The evidence produced shows that a combination of sulphanilamide administration to ambulatory personnel and vaccination will cause a high incidence of transient photosensitization rashes.

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BELLADONNA POISONING

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Glaister (1944) states that cases of accidental poisoning by belladonna preparations are comparatively rare. The following case is, we think, unusual enough to merit publication.

Case Report

A corporal in the Polish Air Force, aged 42, was admitted to a Royal Air Force hospital at 11.20 p.m. on Nov. 4, 1946. He was unable to give a clear account of himself, and the history was obtained from a sick-quarters orderly. The patient reported to the station sick quarters at 4.15 p.m. complaining of vague abdominal discomfort. He was given some medicine, stated to be a gastric mixture. About 7 p.m. others sharing his billet noticed his confused state and took him to the sick quarters, whence he was transferred to hospital. Before admission he was given omnopon, 1/3 gr. (22 mg.), and scopolamine, 1/150 gr. (0.43 mg.).

On admission he was found to be in an extremely restless and agitated condition. While awaiting transfer to a ward he wandered aimlessly round the reception-room, picking up every object he encountered, including a telephone directory and the curtain, and attempting to eat it. He was unable to appreciate his surroundings, and failed to recognize the friends who accompanied him. His speech, which was thick and confused, consisted of an unintelligible jargon. His gait was reeling and incoordinate. In the ward he strongly resisted attempts to undress him. Resistance was accompanied by vague gestures of physical violence, which soon gave way to an air of fatuous resignation.

On physical examination the face was markedly flushed, the mouth dry, and the tongue coated with a heavy brown fur. The breath was not offensive. The temperature was 98.4° F. (36.9° C.). The pulse rate was 122, and its rhythm and tension were within normal limits. The blood pressure was 150/90. Examination of the heart, chest, and abdomen was negative. On admission the respiratory rate was 20. The bladder was distended, being felt 3 in. (7.5 cm.) above the symphysis pubis. The pupils were circular, equal, and widely dilated, with only a thin surrounding rim of iris. They reacted sluggishly to direct and consensual light. There was no nystagmus, and eye movements were full. The fundi were normal. There was a generalized muscular hypertonus, amounting almost to spasticity. The tendon reflexes were exaggerated. The abdominal reflexes were elicited with difficulty, and the plantar responses were flexor. Some ill-sustained ankle clonus was observed, but no patellar clonus. Sensory examination was unsatisfactory owing to the mental state.

Attempts to pass a gum-elastic catheter failed owing to an obstruction in the region of the membranous urethra. However, some 30 minutes later he passed a large quantity of urine, a specimen of which contained no chemical abnormality. In view of the widely dilated pupils, flushed face, dry mouth and tongue, mental state, tachycardia, and distended bladder, a tentative diagnosis of belladonna poisoning was made. As the patient soon became more rational and co-operative, no active measures were indicated. He slept well, and no further confusional symptoms occurred.

On awaking the following morning he was somewhat bewildered, and was amnesic for the events of the previous evening, the last episode he remembered being the administration of some "black medicine." Physical examination was now entirely negative apart from the pupils, which were still somewhat dilated and reacted sluggishly to light. He was mentally alert. Information was received that the "black medicine" was not, as intended, 10 min. (0.59 ml.) of tincture of belladonna, but 10 min. of the liquid extract of belladonna. On Nov. 6 he was mentally and physically normal, and was returned to his unit. Five months later he was in good health. He stated that 10 to 15 minutes after taking the medicine he noticed difficulty in focusing near objects, presumably due to failure of accommodation. A dose of 1 min. (0.059 ml.) of liquid extract of belladonna by mouth produced no ill-effects, except slight dryness of the mouth occurring after one hour and persisting for about 45 minutes. There was no change in pulse, respiration rate, or size of the pupils. It is therefore concluded that there was no element of idiosyncrasy.

Discussion

In this case acute symptoms of belladonna poisoning, followed by rapid recovery, resulted from the administration of a dose which was small compared with that in previously recorded cases. The dose was 20 times that intended: 10 minims of the extract being equivalent to 1/15 gr. (4.3 mg.) of alkaloids, while 10 minims of the tincture is equivalent to 1/300 gr. (0.22 mg.) of alkaloids, calculated as hyoscyamine. Clinically the case conformed fairly well to standard descriptions, but the disordered behaviour, the hypertonus, and the transitory urinary retention (due, presumably, to spasm of the external sphincter) were noteworthy.

Most of the cases described in the literature have followed the external applications of belladonna preparations. Moorhead (1919) described two cases following the absorption of belladonna liniment through the unbroken skin after

massage. Métivier (1935), Duggan (1937), and Hopkins and Robyns-Jones (1937) recorded cases due to the instillation of atropine eye solutions. The last mentioned occurred with washing out the eye with 1% atropine solution after an iridectomy operation. Carter (1940) described the case of a man who swallowed 5 drachms (19.4 g.) of the liniment (equivalent to 1¼ gr. (90 mg.) of alkaloid) in mistake for a cough mixture. The onset of symptoms was delayed 10 hours, and complete recovery followed treatment by spinal drainage, morphine, and physostigmine.

Glaister comments on the variations in dosage found to cause symptoms: 2 gr. (0.13 g.) of atropine have proved fatal, while recovery has followed a dose of 5½ gr. (0.35 g.). Although in our case the amount was ten times the pharmacopoeial dose of the liquid extract (1 min.), the dosages in previously recorded cases have generally been much higher. It appears, therefore, that symptoms of poisoning accompanied by a gross mental disturbance can result from only a moderately excessive dosage.

Summary

A case of accidental belladonna poisoning is described, presenting as an acute confusional state.

The onset of visual symptoms occurred within half an hour of taking 10 minims of the liquid extract, while the onset of general symptoms was delayed for three hours.

Recovery occurred within twelve hours without active treatment.

Subsequent testing for idiosyncrasy proved negative.

We wish to thank Group Captain C. G. J. Nicolls for permission to publish this paper and Prof. J. Glaister for his helpful advice.

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SUPPRESSION OF SYPHILIS AND PRECOCIOUS TERTIARISM

BY

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In cases of early syphilis treated with penicillin in standard doses (2,400,000 units or more) relapse or failure of treatment may be manifested in the following ways (Marshall, 1945): (*a*) Surface relapse. The relapse lesions may be "primary" or "secondary" in type and have occurred, in patients treated personally, between 59 and 200 days after treatment (average 83 days). (*b*) Serological relapse, which may occur with or without signs of surface relapse. (*c*) Sero-resistance. (*d*) Less common types of treatment failure include neuro-recurrence, ocular and osseous relapse, and persistence of *Treponema pallidum* in surface lesions in spite of treatment.

Precocious tertiarism has not, until now, occurred as a manifestation of relapse in any of the patients I have treated with penicillin alone. This phenomenon has usually been seen in the past in patients who had been inadequately treated for syphilis by a few injections of a trivalent arsenical unsupported by bismuth. It is presumed that the rapid destruction of the spirochaetes by arsenicals deprives the body of its one primordial and essential stimulus to fight the infection on its own account—namely, the presence over a long period of the pathogenic agent (Stokes *et al.*, 1944).

There is good presumptive evidence that the administration of an inadequate dosage of penicillin in the following case of early syphilis has upset the normal response of the body tissues to infection with *T. pallidum*.

Case Report

A man aged 30 was first seen in June, 1947, and attended for examination because his wife had been found, at routine antenatal test, to have latent syphilis. (He had been married for one year, and, as a pre-marital serum test for syphilis is obligatory for women marrying serving American soldiers, it can be presumed that his wife was then healthy.) He had not previously shown any manifestations of any venereal disease and gave the following history.

In November, 1945, while on active service in Italy with the U.S. Army, he developed a very itchy rash on the sides of the neck, anterior borders of axillae, trunk, and genitals. The limbs, apart from the upper thighs, were unaffected. The rash did not begin on the genitals and he could not recall any genital ulceration before this time. His last exposure to infection was, he thinks, some six to nine months previously. A diagnosis of scabies was made and he was treated intensively with benzyl benzoate on several occasions over three weeks without relief. At the end of this time he was given 15 or 16 injections of penicillin over two or three days. Individual doses were of 40,000 units, presumably in aqueous solution. The effect was the disappearance of the rash and of the itching in a few days.

It was a routine procedure in his unit for all men to have a serum test for syphilis every six months. He had had tests with negative results in July, 1945 (before the rash), and again a month or two after penicillin treatment.

From November, 1945, he remained in apparently good health, without any skin lesions, until about five weeks before he first attended my clinic. He then developed a rash on his forehead. A few days afterwards a similar rash appeared on his chin, followed a little later by lesions on the penis. Two weeks after the first signs there appeared a spreading lesion of a different type on his left thigh. In the earliest days he had had a sore throat. He had had a serum test for syphilis at a U.S. Army dispensary about a week before he attended, and this was reported as positive.

On examination there were surface lesions of the face, penis, left thigh, and buccal mucosa. The facial lesions consisted of a band of dusky erythema, an inch (2.5 cm.) wide, extending all along the hair margin of the forehead, scaling at the edges and closely studded with pinhead pustules; there was a similar circular patch, one inch in diameter, on the centre of the chin. The mouth showed superficial ulceration of the mucous membrane of the left tonsil and of both commissures of the cheeks. On the shaft of the penis were numerous small purplish oval or circular papules, some eroded, of the type commonly associated with relapsing early syphilis.

On the anterior surface of the middle of the left thigh was a lesion of a different type. This was a roughly circular brown scaling patch, about two inches (5 cm.) in diameter, with a serpiginous edge. The edge showed signs of active spread and had scattered reddish-brown or bluish nodules with superficial scaling. The whole lesion was, clinically, a typical superficial nodular cutaneous gumma. There was moderate enlargement of the lymph glands of the posterior triangle of the neck, of the epitrochlear glands, and of the inguinal glands on both sides.

Dark-ground examination of serum from a penile lesion showed no *T. pallidum*, but in view of the positive serum test, confirmed locally, treatment was not delayed. It was not possible to arrange for lumbar puncture before beginning treatment.

The treatment given on the first day consisted of 0.09 g. "neohalarsine" and 0.2 g. bismuth oxychloride. Three days later the pustular lesions of the face had disappeared, leaving areas of erythema dotted with brownish pigmented spots. The penile lesions had disappeared and the lesion of the thigh was

apparently unaltered. Penicillin treatment was purposely delayed so that non-specific effects could be excluded. Ten days after beginning treatment, penicillin in oil–wax suspension having been superimposed on the arsenic–bismuth therapy, only scattered pigmentation remained on the face and the gummatous lesion was obviously healing rapidly.

Conclusions

It seems probable that in November, 1945, this man had secondary syphilis, possibly masked by scabies, and that the small amount of penicillin (about 600,000 units) given at that time was sufficient temporarily to suppress the disease. The relapse lesions, appearing 18 months later, were of a secondo-tertiary type.

This case suggests that penicillin in inadequate dosage over a short period can, like the arsphenamines, produce the phenomenon of precocious tertiarism. It illustrates the importance of making an accurate diagnosis in any dermatological condition before using penicillin by injection.

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NICOTINAMIDE AND BLOOD SUGAR

BY

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The effect of nicotinamide (N.A.A.) on blood-sugar levels in normal controls and in diabetic patients has been discussed by Neuwahl (1943), Gordon (1946), and Wade (1947). In view of the different results obtained it would appear worth while to record the following observations, which were made at a time when investigations regarding co-enzyme were taking place.

Three fasting normal subjects were given 0.5 g. of N.A.A. by mouth, and all experienced slight effects such as flushing of the face. Blood-sugar estimations were made by Folin and Wu's method, and co-enzyme was estimated by that of Hoagland *et al.* (1942). The results obtained were all identical in type, and the following table shows one curve that was obtained.

Time	Blood Sugar	Blood Co-enzyme
Fasting	0·105 g. %	4·3 mg./100 ml.
½ hr. after 0·5 g. N.A.A.	0·093 „	4·0 „
1 „ „ „ „	0·098 „	4·3 „
1½ hrs. „ „ „	0·103 „	4·0 „
2 „ „ „ „	0·089 „	4·4 „

Two other normal subjects were each given 0.5 g. of nicotinamide and nicotinic acid, and neither showed any variations in blood co-enzyme up to six hours. Another normal subject showed no variation in blood co-enzyme content during the two hours of a blood-sugar curve following 50 g. of glucose by mouth. The blood sugar ranged from a fasting level of 0.099 g.% to a maximum height of 0.186 g.%.

Neuwahl showed two types of response to nicotinamide in normal subjects. One figure demonstrated a marked fall in blood sugar after 0.4 g. N.A.A. intramuscularly and also after 0.25 g. intravenously, whereas in another figure there was a considerable rise in blood sugar after 0.45 g. intravenously. He also showed that 0.06 g. N.A.A. and 2 units of insulin produced a greater fall in blood sugar than did 2 units of insulin alone. Burke and McIntyre (1939), however, had demonstrated earlier that the effect of insulin given to rabbits is not so great—i.e., the blood sugar is depressed less—in those receiving nicotinamide acid.

Wade has recently shown that nicotinamide produced no alteration in the blood-sugar curves of diabetics following 50 g. glucose, even though his patients had received 1.8 g. of nicotinamide daily for 14 days prior to the second blood-sugar curve.

From these results it would appear that, in general, nicotinamide is without effect on the blood-sugar levels in normal subjects or in diabetic patients. The absence of any effect on the blood co-enzyme content is possibly a further proof of this fact.

This work was undertaken while holding an expenses grant from the National Hospital Research Fund, for which my thanks are due.

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Medical Memoranda

Transient Hemiplegia following Injection of Sodium Morrhuate

The following case seems to be sufficiently unusual and disturbing to merit publication.

Case Report

A married woman aged 32 complained of a small area of varicose vein situated between the knee and the ankle of her right leg. This was not causing any inconvenience, but the appearance was aesthetically objectionable. The injection of 0.25 ml. of sodium morrhuate 5% into the vein as initial treatment caused no general disturbance. One week later 0.75 ml. of the same solution was injected. On this occasion the patient complained of giddiness after approximately two minutes. She then fainted; but she recovered rapidly, and the incident was considered to be due to excitement common to any injection.

The following week 0.75 ml. of the solution was injected into the section of the vein which remained unsclerosed. Once more nothing occurred for two or three minutes, when the patient fainted again. On this occasion, however, she did not recover consciousness as before, but sank into a state of deep coma. This rapidly merged into a generalized tonic spasm plus slight clonus of the facial muscles. At this stage the patient was pulseless and cyanosed. The tonic spasm persisted for about five minutes and then gradually changed into a state of semicoma. Vomiting now became severe and persistent, but the pulse was more satisfactory. The more anxious moments of the incident appeared to be passing.

The state of semicoma, however, persisted, and further improvement was barely appreciable for about half an hour. At that time it was observed that a complete hemiplegia had developed, involving the right arm, the right leg, and the left side of the face. The patient was then removed to hospital, still in a state of semicoma.

Two hours later the paralysis of the arm and leg had passed off, a limited degree of paresis of the left face still remaining. The patient was able to speak, but articulation was indistinct. In a further four hours the hemiplegia had completely cleared, tendon and surface reflexes were normal, and all movements were complete. Her speech had recovered and the mental state was excellent. Twenty-four hours after admission to hospital she was discharged, recovery being complete.

Comment

Alarming incidents following the use of sodium morrhuate have been reported occasionally in the medical press, but it is doubtful if the dangers of unusual sensibility to this common preparation are fully appreciated. A case of transient hemiplegia following its use must be exceedingly rare. The satisfactory outcome could not have been foreseen during the severe phase of the coma, and the clinical findings at that stage suggest that recovery was fortunate rather than inevitable. It would appear that the pharmacognostics of sodium morrhuate should be reassessed before its continued use as a sclerosing agent in the treatment of varicose veins be recommended.

W. S. Gardner, M.B., Ch.B., F.R.F.P.S.

Reviews

THE NEW BIOCHEMISTRY

Dynamic Aspects of Biochemistry. By Ernest Baldwin, B.A., Ph.D. (Pp. 457. 21s.) Cambridge: At the University Press. 1947.

This is an excellent book and it is to be hoped that its publication will substantially foster the development of the new attitude to biochemistry which is now making itself apparent in many different ways. Traditionally the author of a textbook of biochemistry (or of so-called physiological chemistry or chemical physiology) devotes a large part of its space to an account of the chemistry of the ingredients of living matter, giving proportionately little attention to discussion of the mechanisms involved in building up and maintaining the activity of the living system and to the all-important biological catalysts involved therein—the enzymes. It is true that until the last ten to fifteen years there was little other than conjecture that could be included in the latter category, but within the past two decades much information has become available on the nature of enzyme systems, their mechanism of action, and, most important, their modes of interaction. With this fundamentally new matter to be digested it was clear that a book would have to be written in which all the traditional ideas of the textbook treatment of the subject were abandoned and the whole story was built around the fundamental unit of biochemical function—the enzyme system.

The writing of such a book Dr. Baldwin has achieved in a masterly fashion; his treatment of a complex subject is excellent and the book is extremely readable. In a book with such a new attitude much of the background information on the chemical nature of the *Bausteine* of living systems has perforce been omitted, and the beginner should use this volume to supplement a textbook of the type usual at present. It cannot be emphasized too strongly, however, that Dr. Baldwin's book provides a survey of the dynamic core of biochemistry such as is to be found nowhere else, and it will be of the greatest importance to all those interested in the subject. The diagrammatic representations of many of the cyclic processes in biological systems are particularly clear. The exposition is not limited to man and the higher animals, but includes much important and relevant information about biochemical mechanisms in bacteria and other lower forms of life.

According to Dr. Baldwin's preface elementary biochemistry is taught at Cambridge in two courses. The first and older of these, chemical physiology, forms part of the course in mammalian physiology and caters primarily for the needs of medical and veterinary students. For these, according to Dr. Baldwin, there already exists a wealth of textbooks, which he neither hopes nor desires to supplant by the present volume. While agreeing that his volume should not supplant the older books, particularly for medical students, the reviewer is convinced that the newly developing dynamic spirit of biochemistry will ultimately but inevitably fashion all the textbooks of the future, so that the distinction between them and the later editions of Dr. Baldwin's book will become much less formidable. The present growing understanding of the biochemistry of the normal naturally leads to the elucidation of the biochemical basis of deranged function, and the logical development of therapeutic measures thus becomes possible. For the medical man Dr. Baldwin's book provides a masterly and unique treatment of this most important and rapidly developing background of medical art and science; this is a book he may read with profit and with pleasure.

F. G. Young.

RECENT SURGERY

The 1946 Year Book of General Surgery. Edited by Evarts A. Graham, M.D. (Pp. 679; illustrated. 21s.) Chicago: The Year Book Publishers, Inc. London: H. K. Lewis and Co.

The 1946 issue of this well-known book is, like the previous volumes, edited by Evarts Graham, and we have nothing but praise for his choice of material for inclusion. The cover sheet contains the customary "Quiz": we must confess to being quite unable to answer the majority of the questions without referring to the contents of the book.

It is difficult to appraise adequately a book which is itself a digest of the year's surgical literature. Its emphasis is naturally upon American writings. Among the hundreds of articles summarized we were particularly interested in those concerned with the successful use of vitallium tubes for establishing portocaval anastomoses, new methods of dealing with troublesome verrucae pedis, the creation of an artificial ductus arteriosus in pulmonary stenosis, and the intraperitoneal use of skin grafts to reinforce intestinal anastomoses. There is a disproportionately large number of articles on the treatment of pilonidal sinuses, which suggests that a reliable method of curing this refractory condition has yet to be discovered. The illustrations, usually reduced from the original, are nevertheless clear and helpful.

Norman C. Lake.

TEXTBOOK OF NEURO-ANATOMY

The Anatomy of the Nervous System. By Stephen Walter Ranson, M.D., Ph.D. 8th ed. Revised by Sam Lillard Clark, M.D., Ph.D. (Pp. 532. 417 illustrations, 14 in colour. 32s. 6d.) Philadelphia and London: W. B. Saunders Company. 1947.

This useful and well-known textbook continues to be popular. The Professor of Anatomy in the Vanderbilt University School of Medicine at Nashville has prepared this edition. The most substantial change from the previous one, and a great improvement, is the rearrangement of the text. Dr. Clark has collected the descriptions of gross anatomy into a single chapter near the beginning of the book, and brought forward the chapter on the meninges and blood vessels so that it lies next in sequence. There is some lack of balance here, for the accounts of arterial distribution within the brain are so brief as to appear almost perfunctory in comparison with some other parts of the book.

The removal of "clinical illustrations" from an inconspicuous position in a chapter formerly entitled "A Laboratory Outline" to a special chapter emphasizes their value in the presentation of neurological anatomy. In a future edition we should like to see a more detailed account of the spinal reflexes and the related structural pattern, discussed in a manner similar to that used for the brain-stem reflexes, and also a fuller and more up-to-date discussion of neurobiotaxis.

Prof. Clark has included the results of some new work, but we notice some important omissions—for example, the work of J. Z. Young on peripheral nerves. There is no reference to recent work on the nervus terminalis or to Boyd's work on the innervation of the carotid sinus. The author represents the arachnoid mater as enclosing both buccal and neural portions of the hypophysis, without referring to Wislocki's views. We also looked in vain for reference to recent work on the vascular relations of the neural hypophysis and the hypothalamus. On the other hand there is a relatively full account of the nuclei of the thalamus and hypothalamus, incorporating recent work by Ingram and Le Gros Clark. The book is attractively printed, and it should retain its reputation as an elementary work of reference and a textbook for students of neuro-anatomy.

A. B. Appleton.

BROWN-SÉQUARD

Charles-Édouard Brown-Séquard. A Nineteenth Century Neurologist and Endocrinologist. By J. M. D. Olmsted, M.A., Ph.D., D.Sc. (Pp. 253. $3.00 or 16s.) Baltimore: Johns Hopkins Press. London: Geoffrey Cumberlege (Oxford University Press). 1946.

The author can congratulate himself upon his inspiration, for the personality of Brown-Séquard holds special attractions for a biographer. It is surprising indeed that no other medical historian, except the Mauritian Rouqet, has attempted to record the vicissitudes and peregrinations of this 19th century neurophysiologist. The background is unusual. Born a British subject, of a French mother and an American father, in the isle of Mauritius, with Irish blood somewhere in the offing, Brown-Séquard spent his days in restless unsettlement, scurrying between the Indian Ocean, Paris, North America, Dublin, and London. He is reported to have crossed the Atlantic sixty times. In the U.S.A. he held chairs in Richmond, Philadelphia, New York, and Boston. During his sojourn in London he acquired a fashionable practice in Wimpole Street, but holds a more lasting claim upon our respect for his founding, with Dr. Jabez S. Ramskill, the National Hospital for the Paralysed and

Epileptic in Queen Square. This was in 1859. Three years later this pioneering couple of neurologists had taken on three junior colleagues—Sir William Ferguson, J. Z. Laurence, and J. Hughlings Jackson. But Brown-Séquard was off again by 1863. Possessed of a demon which drove him to work at physiological experimentation, at a great pace and at high pressure, he abandoned clinical practice. His earlier researches were concerned with the sensorial effects of partial section of the spinal cord, and they form an important chapter in the physiology of the nervous system. Later investigations, though ingenious and stimulating, were less successful, for he possessed grave defects as a detached observer; only too often were speculation and enthusiasm to lead him astray. It seems probable that an important cause of his being a rolling stone was that he was repeatedly forestalled in his career by his senior colleague Claude Bernard. North American colleges and universities were to him an inadequate substitute for a professorial appointment in his beloved Paris, and it was not until the age of 61, on the death of his rival, that he was appointed to the Chair of Medicine at the Collège de France. His three marriages—and he outlived all three wives—his cult of rejuvenation with testicular autografts, his pursuit of lost causes in physiology, are aspects of a vivid picture of a striking neurologist—brilliant but a little mad.

Such is an outline of the material which Prof. J. M. D. Olmsted, the author of this short biography, has had at his disposal. The product is a delightful trio of addresses, the Noguchi lectures of Johns Hopkins University. They form a scholarly and stimulating contribution to 19th century medical history.

MACDONALD CRITCHLEY.

OBSTETRICS AND GYNAECOLOGY

The 1946 Year Book of Obstetrics and Gynaecology. Edited by J. P. Greenhill, B.S., M.D., F.A.C.S. (Pp. 655; illustrated. $3.75 or 21s.) Chicago: The Year Book Publishers. London: H. K. Lewis and Co. 1947.

This book will be welcomed in academic obstetrical and gynaecological circles. The volume, compact and handy, contains an accurate review of the previous year's publications, original work receiving due emphasis, with an excellent index of subject matter and authors' names. The abstracts are well chosen, and sufficient attention has been paid to the papers published in Great Britain. Among others the studies of Theobald, Dick Read, Stanley Way, McAfee, Browne and his co-workers, Vatan, and R. C. Thomas are adequately considered. The paper of Edward Davis and Gready might have been presented more fully, for their study of maternal mortality at the Chicago Lying-in Hospital is one of the most instructive publications of recent years. Gunnar Teilum's valuable papers are perhaps not sufficiently emphasized, and the abstract is not very clear. It must be admitted, however, that the original papers are not easy to understand. We should mention particularly the work of Varangot and his co-workers on the use of sparteine sulphate and that of Edward Davis and Edith Potter on intrauterine respiration, as well as papers on the transmission of penicillin to the foetus *in utero*, and on the excretion of penicillin in human milk. There is the usual annual review of the treatment of trichomonad infections and of dysfunctional uterine bleeding.

Greenhill's comments have matured with time and are admirable in the present volume. His plea for conservatism in midwifery is sustained and his observations on Miller's extraordinary paper are well worth reading. Editorial comments demand shrewd judgment and they do not always withstand the passage of time. One remembers McClintock's comments in his edition of Smellie. This book is worthy of its predecessors, and indeed in many ways is an improvement on them.

WILFRED SHAW.

Pye's Surgical Handicraft has reached its 15th edition and is again edited by Mr. Hamilton Bailey. There are nearly 800 illustrations and in every section an attempt has been made "to present technical procedures pictorially." A few of the illustrations are in colour and the colour is not very good. Apart from this the production is excellent and Mr. Bailey and his team of contributors will obviously be called upon to prepare a 16th edition within the next two or three years. The publishers are John Wright and Sons, Ltd., and the price is 25s.

BOOKS RECEIVED

[Review is not precluded by notice here of books recently received]

Loose-Leaf Specialties in Medical Practice. Renewal Pages Edited by Edgar Van Nuys Allen, M.D. Vols. I and II. New York and Edinburgh: Thomas Nelson. 1947.

Includes new material on antihistamine compounds, antibiotics, the vitamins, and carcinoma of the prostate.

Bone Dystrophies. By F. Y. Khoo. (Pp. 169. No price.) Chengtu, China: The Canadian Mission Press. 1945.

A review of bone dystrophies, with extensive references to the literature.

Chiropody: Theory and Practice. By Franklin Charlesworth, F.Ch.S. 3rd. ed. (Pp. 406. £2 2s.) London: Charlesworth and Wiles. 1947.

A textbook of chiropody, with an introductory account of anatomy and physiology, and many illustrations.

Modern Development of Chemotherapy. By E. Havinga, H. W. Julius, H. Veldstra, and K. C. Winkler. (Pp. 175. 15s.) London: Cleaver-Hume Press, Ltd. 1946.

Research into the sulphonamides carried out in Holland during and since the war.

Contribution à la Connaissance de l'Avitaminose C chez l'Homme. By J. V. Espin. (Pp. 46. No price.) Paris: Librairie Maloine. 1946.

A monograph on vitamin C deficiency in man, with case histories.

Tratado Practico de Hemoterapia. By Dr. E. S. Sammartino *et al.* (Pp. 831. No price.) Buenos Aires: Vazquez. 1947.

Discusses blood transfusion, the sources and storage of blood, blood groups, and transfusion reactions.

Tuberkulöse Reinfektion beim Rinde und ihr Einfluss auf die Resistenz. By E. Gräub, P.D. (Pp. 93. 12 Swiss francs.) New York and Basle: S. Karger. 1947.

A monograph on tuberculosis in cattle, with an appendix on tubercle bacilli in milk.

Psychologie du Suicide. By Gabriel Deshaies. (Pp. 375. 360 francs.) Paris: Presses Universitaires de France. 1947.

The hereditary, social, and psychological factors determining suicide are discussed, as well as methods adopted and the "death instinct."

On the Problem of Poliomyelitis. By Bertel S: Son Bertenius. (Pp. 212. No price.) Lund, Sweden: Carl Bloms Boktryckeri. 1947.

A monograph on the incidence and characteristics of outbreaks of acute anterior poliomyelitis.

Estudio de las Contralateralizaciones, Especialmente Precoces, en los Procesos Pulmonares Tuberculosos de Apariencia Radiologica Unilateral. By Dr. F. Tello-Valdivieso. (Pp. 77. No price.) Madrid: Publicaciones del Patronato Nacional Antituberculoso. 1946.

An account of tuberculous lesions occurring in both lungs in cases where *x* rays reveal them on only one side.

La Tuberculosis Pulmonar Inadvertida y los Reconocimientos Radiologicos Seriados. By Dr. Jose Zapatero. (Pp. 119. No price.) Madrid: Publicaciones del Patronato Nacional Antituberculoso. 1946.

A monograph on unsuspected tuberculosis discovered by mass radiography.

The Essex County Health Handbook. By William A. Bullough, M.B., M.Sc., D.P.H. (Pp. 72. No price.) Cheltenham and London: Ed. J. Burrow and Co., Ltd. 1947.

An illustrated pamphlet intended to inform the lay public about the health facilities provided by the Essex County Council.

Recent Advances in Medicine. By G. E. Beaumont, M.A., D.M.(Oxon.), F.R.C.P., D.P.H., and E. C. Dodds, M.V.O., D.Sc., Ph.D., M.D., F.R.C.P., F.R.I.C., F.R.S.Ed., F.R.S. 12th ed. (Pp. 422. 21s.) London: J. and A. Churchill. 1947.

Includes new material on synthetic antimalarial drugs, antibiotics, vitamins, thiouracil, primary atypical pneumonia, homologous serum jaundice, and thiocyanates for high blood pressure.

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GENETICS AND SCIENCE IN THE U.S.S.R.

After the Russian revolution the philosophy of dialectical materialism, as elaborated by Marx and his followers, became official in Russia. In theory this might have been expected to affect the development of the natural sciences. In practice, at least for some time, nothing of the kind seemed to happen. The collection of factual information and its interpretation still seemed to be independent of the religious or philosophical views of the investigator; a Catholic, a Protestant, an agnostic, or a Communist confronted with the same problem still approached it in the same way, within the limits of human error obtained the same results, and then proceeded to draw the same conclusions. Doubtless this was because all these people, in their scientific work, tacitly accepted some form of realist or materialist philosophy. The present generation does not perhaps recall sufficiently often that this attitude of detachment is, in its modern phase, of comparatively recent growth; it is, after all, not very long since the controversies on the theory of evolution. The emergence of a new and militant religion, for it is no less, might well be expected to disturb the philosophic calm, and it would perhaps naturally be expected that the first effect would be seen in the biological field, in the consideration of the evolution and development of the living organism and of its relation to its environment.

It was in biology, and especially in genetics, that the new attitude first seems to have become apparent. The non-Russian scientific world during the last twelve or fifteen years has been startled and confused by the echoes of controversy within the U.S.S.R., a controversy conducted with a vigour that has apparently culminated on occasion in violence. The secrecy that surrounds many Russian activities, the language obstacle, the difficulty of obtaining Russian publications, their unfamiliar form, ignorance of the background, attempts to interpret the Russian writings on Western lines, have all been responsible for much bewilderment. A useful service has, therefore, been performed by the Imperial Bureau of Plant Breeding and Genetics, which has published *The New Genetics of the Soviet Union*, a thorough and fully documented account,[1] by Dr. P. S. Hudson and Mr. R. H. Richens, of the Russian controversy. The authors, in tracing the history of this new development, in expounding the views of the opposing schools, and in bringing forward certain tentative objections to what appears to be the dominant view, have made every effort to be clear, temperate, and impartial. The result is a masterly and remarkably concise monograph which every biologist should read—and not only every biologist, for it will help all those who wish to understand modern Russian thought in relation to biology, and so to medicine.

The leader of the new Soviet genetics is the botanist Lysenko, his principal lieutenant being Prezent. Following some earlier work of distinction, Lysenko (with Prezent) published in 1935 a book which challenged many of the generally accepted fundamentals of genetics as held outside, and also largely inside, the Soviet Union. The attack has gathered force through the years, and there have been bitter arguments at successive genetic conferences. The chromosomes and the genes have been thrown overboard altogether as of no more than trivial significance; it is held that the "pure line" does not exist; that self-fertilization necessarily leads to deterioration; that the cross-bred individual possesses all the potentialities of both parents (i.e., that cross-breeding is an additive process); while any segregation in the F2 generation is simply a loss by subtraction. The distinction between phenotype and genotype is denied. Inherited characters can be transmitted via the sap from stock to scion in grafts. Lysenko has elaborated a theory of nutrients (this word being used in a very wide sense), organic structures being regarded as having arisen by the conversion of individual "elements" of the environment into the living substance of the plant, which is credited with the capacity for selecting those elements which will confer advantage on the progeny. As a special case of this theory it is supposed that, when offered the choice of mixed pollen grains, the ovum of the plant tends to select one which will confer selective advantage upon the progeny, and certain experimental results have been adduced in support.

The organism, for Lysenko, does not endure as an immutable entity. It is regarded as a stream of stages, each but a momentary reality and engendering from its assimilative union with the environmental nutrients the following stage. The whole flux of stages is the concrete reality, not a hypothetical static entity, the genotype. Moreover, the flux proceeds cyclically, each cycle representing one generation, the similarity between consecutive cycles depending on the assimilation of appropriate nutrients.

The fact that parents tend to produce offspring like themselves is attributed to a principle of "conservatism," which may, however, be "shattered" by adverse environmental conditions, hybridization, or grafting. The authors of the monograph, advancing temperate criticisms of these and other views, repeatedly point out that the theories are often elastic—i.e., that appeal to unknown factors is used to explain away any apparent discrepancy. Thus it is held that earliness—i.e., maturity early in the season—is biologically valuable, and as it is also held that in a cross the potentialities of both parents are fully present, and that the most valuable will be "dominant" and expressed, it follows that the F1 plant cannot be later than the earlier parent. Further, as segregation on inter-crossing the F1 plants is held to be due to a subtractive process, it also follows that no F2 plant can be later or earlier than the parental types. Confronted with exceptions to these rules, Lysenko and his school explain that they would have held only that some (unspecified) biological conditions were wanting.

[1] School of Agriculture, Cambridge, England. May, 1946. Price 6s.

The biologist of traditional outlook confronted with such revolutionary ideas would first want to review the evidence, attempt to repeat the experiments, and to devise critical tests which might be expected to decide between alternative explanations. He would be somewhat deterred by the slightness of the evidence at some points, this being complicated by the fact that the Lysenko school forbids the use of statistical methods; by the elastic nature of some of the theories to which reference has already been made; and by the failure to take into account the immense advances in knowledge in genetics and cytology of the past thirty years—for it is the genetics of 1910 that is under attack. Nevertheless, he would probably feel that certain points brought forward and certain experimental results were worth further investigation. For example, there is the possibility that, after all, mutation may not be a process devoid of direction, a possibility also raised by recent work outside Russia. But simply to adopt such an attitude would be naïve, and the authors of the monograph cannot be acquitted on this score. They conclude:

> An attempt has been made to present all the evidence as it appears in the published writings of Lysenko and his school, and to analyse both the merits and defects of his arguments. It is earnestly hoped that by so doing much misunderstanding will have been removed and geneticists of each school will be encouraged to examine their own and each others' data in an unprejudiced light. This should lead ultimately to a synthesis of what is best in both schools, thereby achieving that comprehensive understanding of genetical questions which is the aim of both bodies of investigators.

But is not this to ignore the difficulty of finding a common ground? As the authors themselves make clear, much of the argument of the Lysenko school lies outside the field of accepted Western scientific thought, being alogical—not, that is, illogical, but deriving from beliefs not shared by those who do not accept dialectical materialism. There is the appeal to authority, to Marx, to Darwin, and to the other writers of the accepted books. There is the analysis of the presumed motives and state of mind of opponents and reference to their material circumstances. It is held to be a strong point against hitherto accepted genetics that Mendel was a monk, and Mendelism is charged with being the attempt of clerical reactionary elements to replace the materialistic biological system of Darwin by a veiled form of idealism. Lysenko accuses his principal Russian opponent of to-day of writing as he does through anger at the contempt shown to genetics by the Lysenko school, and through indignation that people of humble origin should presume to criticize the dicta of a closed society of self-regarding geneticists. In condemning Vavilov's Law of Homologous Variation and his theory of Centres of Origin, Prezent in 1939 pointed out that Vavilov was a disciple of Bateson, the notorious anti-Darwinian heresiarch. Timiojazev (an accepted authority) was said to have dubbed Bateson an "irresponsible ignoramus, an unbridled scholastic realist, and a cleric of science." Hence Vavilov's theories too must stand condemned. Accusations of fraud seem not infrequent. The Lysenko school has many opponents, but of course they too preface their arguments by statements of faith in dialectical materialism and are concerned to show that Mendelism and formal genetics when properly interpreted are not inconsistent with that philosophy nor with the accepted writings. Argument on factual grounds comes second. Whether the biologists of other countries can usefully plunge into these spirited exchanges, and whether they will be thanked if they do, seems doubtful. It would no doubt be useful to send observers, though perhaps these should be philosophers and professors of comparative religion rather than men of science in the Western sense.

It remains to add that the teachings of the Lysenko school are not yet part of the canon of the faith; and, of course, may never be. Official encouragement, however, has not been lacking. At the genetical congress of 1939 the Commissar of Agriculture is reported to have said that "the People's Commissariat of Agriculture of the U.S.S.R. supports Lysenko in his practical work and in his theoretical views and recommends the breeding-stations to apply his methods in seed production and breeding work." Lysenko became President of the Lenin Academy of Agricultural Sciences in 1938, replaced Vavilov about 1940 as Director of the Institute of Genetics of the Academy of Sciences, and has twice been awarded the First Stalin Prize and also the Order of Lenin. He is Vice-Chairman of the Supreme Soviet. Some at least of his opponents, however, have not ceased to criticize his views, though apparently avoiding controversial issues to a certain extent. Zhebrak has published letters in the foreign scientific press stressing this opposition and stating that a belief in many at least of Lysenko's theories is not obligatory. But Zhebrak, according to the *Manchester Guardian*,[2] is now being subjected to a heresy hunt. Three Communist poets have accused him of being in "complete solidarity with the most reactionary American professors." The *Guardian* gives the following quotation from an article in *Pravda*.

> Zhebrak as a Soviet scientist should have unmasked the class meaning of the struggle which is taking place around questions of genetics. But, blinded by bourgeois prejudices, by detestable fawning on bourgeois science, he has adopted the attitude of the enemy's camp. . . . It turns out there is a so-called pure science for Zhebrak. . . . It appears that there is no progressive Soviet biological science; there is no reactionary biology in the world. . . . How unsightly is the role of Zhebrak!

In a review in *Nature*[3] about a year ago Prof. Eric Ashby, who has visited the U.S.S.R. and conversed with Lysenko, wrote: "As to the present state of the new genetics in the Soviet Union, it is safe to assume that Lysenko's school is well past its zenith." But the *Pravda* attack on Zhebrak suggests that genetics is once again becoming an acute political issue in the U.S.S.R. Indeed, according to an article in *The Times*[4] the cultural curtain between the East and the West is once more to become so opaque as to justify the description "iron." The Praesidium of the Soviet Trade Union Central Council has issued a decree condemning "adulation and servility towards things foreign and towards the putrefying reactionary culture of the bourgeois West." Russian press articles condemn by name Soviet men of science and inventors "thirsting for praise from foreign scientists and pseudo-scientists." What has happened to geneticists when Russia

[2] Sept. 26, 1947.
[3] 1946, 158, 286.
[4] Oct. 4, 1947.

is seized with a paranoid psychosis is revealed—we believe for the first time—by Dr. C. D. Darlington, F.R.S., the well-known Cambridge geneticist, now Director of the John Innes Horticultural Institution. In an article published last week he tells[5] a story that can "be told and interpreted on sufficient documentary authority." N. I. Vavilov, subsequently opposed by Lysenko, was appointed by Lenin President of the Lenin Academy of Agricultural Sciences in 1921. During the following twelve years, Darlington writes, "Vavilov's work was one of the most impressive signs of the scientific prosperity of the Soviet Union." Vavilov's work was an inspiration to many Dutch, American, and British scientists. After 1928, under the Stalin regime, Marxist orthodoxy began its ideological incursions into the domain of science. "A Government," Darlington writes, "which relied on the absence of inborn class and race differences in man as the basis of its political theory was naturally unhappy about a science of genetics which relies on the presence of such differences amongst plants and animals as the basis of evolution and of crop and stock improvement." In 1928 a new genetic prophet was found in the person of Lysenko. Vavilov (who had been nominated President of the International Genetics Congress of 1939 in Edinburgh) was arrested in 1940 and later condemned to death—allegedly because of espionage for Britain. When the Moscow prisons were evacuated in 1941 Vavilov was sent to a concentration camp, where he died. Before this the cytologist G. A. Levitzky and his pupil N. P. Avdoulov were sent to labour camps in 1932, and at the same time B S. Chetverikov, "pioneer of population genetics," and W. P. Efroimson were sent to Siberia. In 1935 the two geneticists I. J. Agol and L. P. Ferry were put to death. In 1937 the head of the Institute of Medical Genetic Research in Moscow, S. G. Levit, was also put to death. Other biologists and geneticists were sacrificed on the altar of the new Russian religion. "In a word," Darlington writes, "after thirteen years of persecution, the great fellowship of Russian biological research, formed in the revolution, had been crushed and broken." And Darlington adds later: "Never before has science offered so many martyrs to its cause, men, too, honoured and beloved throughout the world." Darlington has done a great service to truth in putting these facts on record, facts which many have been uneasily aware of and which some have almost hoped would lie buried in history. For persecution of a similar nature we have to go back to the days of the Inquisition, and such persecution must be interpreted as religious and not political. And we may believe that many men of science and medical men in the U.S.S.R. secretly condemn these acts as strongly as we do openly in this country, where we have the precious liberty to condemn such acts publicly.

It is still difficult to discover just what progress is being made in Russian science and medicine, and the position is obscured by the fact that Soviet propaganda distorts the truth in a way that can only be described as naïve. For example, Prof. Ashby, who was attached as a scientist to the Australian Legation in Moscow in 1944, records in his interesting book *Scientist in Russia*[6] how Prof. Z. V. Ermolyeva was acclaimed in 1945 as "the discoverer of the new drug penicillin," and *Pravda* referred to her "greatest discovery . . . Soviet penicillin," adding that it had *also* been discovered by Fleming. Fleming's penicillin, no doubt, had the demerit of being bourgeois and capitalistic. Ashby nevertheless has nothing but praise for "the good Soviet scientist," whom he found to be very well informed on foreign work. Soviet scientists, he said, were eager for contact with workers in other countries—but the Kremlin imposes its veto. Until there can be free interchange of ideas by personal contact between Russian scientists and medical men and their colleagues in other countries ignorance and misunderstanding will prevail. And if the value of a man's scientific work is to be judged in terms of his political faith, as in the strange and tragic story of Lysenkoism, then mutual understanding will indeed be hard to come by.

[5] *The Nineteenth Century*, Oct., 1947.
[6] Published by Penguin Books, 1947. Price 1s.

ROAD ACCIDENTS

It is many years since public opinion demanded that a man on foot holding a red flag should walk in front of motor vehicles. We laugh now at that precaution, but the alarm felt in those days has been more than justified by the subsequent slaughter on the roads which we complacently accept as a normal part of social life. Just before the recent war there were about a quarter of a million road accidents a year, 6,500 of them fatal. During the war, deaths on the road numbered more than 40,000, or about two-thirds of the total caused by bombing. In 1946, 5,062 were killed. The prevailing indifference to this avoidable loss of life is worth investigation, if only for the reason that measures taken to prevent it require, if they are to succeed, something more than public approval—namely, the active co-operation of all road users. In addition, if there are reasons for people not wishing to pay attention to the problem, a knowledge of them is essential if education and propaganda are to uproot them. Outbreaks of food-poisoning are front-page news; so at the moment is the poliomyelitis epidemic, though its effects will no doubt be numerically far less tragic than those of the year's road accidents. Railway accidents, aeroplane crashes, ships lost at sea, mining disasters, all cause alarm and are investigated by courts of inquiry, yet the lives lost are comparatively very few.

There are two obvious reasons for this disparity of interest: first, the public sees the external cause of the catastrophe—a defective water supply, a faulty signal, a pilot's error. The public itself, or the individual newspaper reader, feels no responsibility for it. Secondly, the impact of these events is enhanced by their suddenly occurring at a particular place and time. On the other hand road accidents concern all road users; responsibility for them cannot readily be attached to a particular person or organization; and, more insidious, they are happening everywhere and every day: they are commonplace. To these two causes of apathy we might add a third, suggested by Dr. Soddy in the lecture printed at p. 623 of this issue.

Many people find driving fast an outlet for their aggression. Directing a powerful machine brings deep satisfaction to minds that cannot control their own powerful and immature instincts. Many people unconsciously share the desire for this form of self-expression, and, though they consciously realize its dangers, whether car owners or not they condone it. It is important to investigate motives such as these, for with the modern techniques of propaganda available, by which the unconscious levels of people's minds may be systematically appealed to—for once in a thoroughly good cause—it should not be difficult to arouse enthusiasm for reducing road accidents. It may not be too fanciful to suggest that when a potential suicide crosses a road along which a potential homicide is driving the chance of survival is slight.

The Committee on Road Safety, which was appointed in 1943, has recently issued its Final Report.[1] It believes that the propaganda carried out since the war "has had a good effect," and it advocates the continuance of such measures as well as of education for road safety in schools. It proposes a number of new regulations to control the activities of pedestrians, bicyclists, and motor drivers, and recommends the collection of facts for statistical analysis. It also advises that motor-cars should be subjected to periodic testing at special inspection stations.

The fact that a small proportion of road users are to blame for a large proportion of accidents has been recognized for some years. Psychological tests have been successfully used by private and public concerns to detect "accident-prone" employees, but the Committee sees certain difficulties in using them to eliminate accident-prone drivers. Such tests could not, of course, detect all drivers prone to accidents for psychological reasons, for the man who has a grudge against authority may be as dangerous on the road as a man whose ability to judge distance is faulty; yet he is unlikely to be detected by any psychological test used at present. It would be administratively impracticable to apply intricate tests to all new drivers. If applied to drivers who had been involved in one or more accidents it would be necessary to apportion blame accurately—an exceedingly difficult task. The Committee therefore recommends that further research into the possibility of determining accident proneness by test is desirable.

We have no precise knowledge of the part played by alcohol in road accidents. In 1938 the ratio of motor drivers convicted of being under the influence of drink to other road users convicted of drunkenness in public places was 1 to 19. It is possible that alcohol would more often be found in the victim than in the slayer, if it were looked for. However, according to Sidney Smith,[2] fewer accidents are the result of intoxication than is commonly believed. The Committee advises displaying propaganda on licensed premises, but makes no definite recommendation on the introduction of blood tests. Other points of medical interest are the Committee's proposal—in which they refer to Sir Hugh Cairns's work, an account of which appeared in this *Journal*[3]—that a crash helmet for civilian motor-cyclists should be developed; and that it is desirable, but not enforceable, that first-aid equipment should be carried on all vehicles. Medical men particularly might bear the latter suggestion in mind.

No single measure will eliminate road accidents, and if their numbers are to be diminished at all we must submit to more restrictions of our personal liberty, whether drivers or pedestrians. A few may ask, Is it worth it? The nation must make the decision, and it can do so only if it is presented with the facts: on the one side the loss of more life, on the other the loss of more freedom. As medical men we must be deeply perturbed by such a cause of death, and also by the amount of work involved in treating such injuries.

[1] *Final Report of the Committee on Road Safety*, H.M.S.O., 1947.
[2] *Practitioner*, 1945, **154**, 205.
[3] *British Medical Journal*, 1946, **2**, 322.

CHOLERA

The cholera epidemic in Egypt is now in its fourth week and in one day recently was responsible for 112 deaths, 7 of them in Cairo. Cases have appeared in Suez and a single notification from Kena suggests that the epidemic, which had been restricted to Lower Egypt, may spread to Upper Egypt. Outbreaks of cholera involving some thousands of cases have also been reported from the East Punjab and Delhi and from other areas where a mass migration of refugees is now taking place. In India cholera takes a heavy toll of human life every year, especially in the Ganges valley. Fairs, religious festivals, and political gatherings are only too often the scene of great outbreaks of cholera in a land in which flies abound and where drinking of the heavily polluted water of sacred rivers and ponds is a necessary religious rite. In the Punjab the recent floods have further contaminated existing water supplies, and sanitary arrangements and, indeed, habits are almost non-existent.

Clinically cholera varies in intensity from a mild diarrhoea to the fulminating form with early collapse and death from intense toxaemia. Untreated cases have a mortality rate of from 80% to 5%, the latter figure being found towards the end of an epidemic. In evaluating new methods of treatment it is therefore necessary to treat large numbers of patients of approximately the same age and social status at the same stage of the same epidemic, giving the treatment under trial to alternate cases only. In the early part of this century Sir Leonard Rogers introduced his well-known fluid-and-salt-replacement treatment in Calcutta. This still remains the basis of treatment to-day. Even in mild cases there is marked depletion of the blood and tissue fluid volume and loss of the essential salts. Marriott's recent Croonian lectures[1] demonstrated clearly the urgent need for a general understanding of the principles involved. Cholera is an outstanding example of rapid water and salt depletion, with the addition of a severe toxaemia produced by the vibrio.

The recognition by Rogers so long ago of the importance of water and salt replacement in cholera has saved countless lives, but the need for a minimum amount of apparatus and for skilled attendants has led to the treatment being carried out imperfectly in small towns and often not at all in rural areas. Many a devoted missionary in India and China has performed wonders with a teapot, a piece of rubber tubing, a hollow needle, and water drawn originally from a village well. To obtain the best results, however, hospital conditions are desirable, with adequate facilities for sterilizing large quantities of pyrogen-free water, for keeping constant watch on the blood pressure and the specific gravity of the blood, for measuring the output of urine, and for disposing safely of excreta. The use of a

[1] *British Medical Journal*, 1947, **1**, 245, 285, and 328.

continuous plasma drip between the periodic saline infusions has been shown to reduce still further the mortality rate of cholera treated in hospital.

The cholera vibrio is not penicillin-sensitive and streptomycin has been tried in cases of cholera without significant success. The sulphonamide drugs, however, do reduce the case mortality, the duration of the diarrhoea, and the period of infectivity. Sulphaguanidine and sulphadiazine have proved useful. Early administration of both soluble and insoluble sulphonamides is advised, but after the first day sulphaguanidine should be preferred. The introduction of sulphonamide therapy has not only improved the results of treatment in hospital but has brought new hope to those in lonely villages and rural tracts. The natives of such areas as North Bihar, for example, clamour for the tablets issued by the public health authorities for the treatment of malaria and plague. There are now welcome signs that they are becoming "sulpha-conscious" in connexion with their annual visitation by cholera.

On the public health side the high hopes once entertained for bacteriophage as a destructive agent against vibrios in well water—and as a therapeutic measure—have not been fulfilled, probably because of the high degree of specificity of "phage" and the numerous slightly different strains of vibrio. There is no short cut to prevention, and the important measures are still chlorination or boiling of drinking water and protection of important sources of supply; steps to prevent the exposure and sale of sliced fruits and vegetables; the avoidance of uncooked salads; and careful inspection of food handlers and cooks, with a special watch for mild gastro-intestinal upsets. The D.D.T. spray now being extensively employed in Cairo, presumably in Ghamra, Shoubrah, Bulaq, and similar districts, should help materially in reducing the danger from flies. In Egypt as in India insufficient attention has been paid in the past to the disinfection and safe disposal of infected excreta, and in both countries flies are omnipresent and important disease vectors.

It has been recommended that passengers leaving this country for India, Egypt, or elsewhere in the Middle East should be inoculated against cholera. International regulations require two inoculations with a seven-day interval, and the certificate that this has been done becomes valid six days after the second inoculation and remains in force for six months. Although statisticians are not yet agreed about the efficacy of anti-cholera vaccine, public health authorities are practically unanimous in pressing for inoculation with vaccine prepared from known pathogenic strains of the vibrio. The protection given is believed to be of short duration, and mass inoculation is advised when an epidemic threatens and for intending visitors to great religious fairs. Both India and Egypt have had to be helped with supplies of vaccine. Egypt has recently received large quantities of vaccine from this country, among others, and from South Africa, Russia, and Sweden. There are no vaccine factories in Pakistan, and India's output will barely suffice for her own needs. Here, too, there has been a generous response from countries all over the world and vaccine, blood, plasma, and sulphonamides have all been flown to the affected areas.

OCULAR SYMPTOMS OF POLIOMYELITIS

In 1944 Denmark experienced so extensive an epidemic of poliomyelitis that in some six months 279 patients with fresh acute anterior poliomyelitis were admitted to the Frederiksberg Hospital at Copenhagen. In this group, recently described by Kindt and Knudtzon,[1] there were rather more males than females, and 115 patients, about 40%, were more than fifteen years of age. More than half the patients had no paresis of any kind, and there were 18 deaths. Among the 138 patients with pareses the lesions were exclusively spinal in origin in 101, bulbopontine in 22, and both spinal and bulbopontine in the remaining 15. Of the 37 patients showing bulbopontine lesions no fewer than 23 had eye symptoms, and of these 23 patients only 5 were under the age of fifteen and 3 of them died: of the 18 adults 2 died. Diplopia was the first symptom in 3 patients. In most of the others the disease had been established between four and eleven days before the eye symptoms appeared, and in 20 out of the 23 cases the ocular symptom was diplopia combined with blurred vision or, in a few patients, flickering before the eyes. Diplopia was probably present in all cases, since the three patients who did not complain of it were all very ill and died.

The diplopia was constant in some patients and transitory in others, and was generally most marked in one particular direction. Nystagmus was noted in six patients and unilateral ptosis was observed in one case. Paresis of the oculomotor nerve was seen on three occasions. The authors hold that the paresis of the ocular muscles was nuclear in origin and that the paralysis of the associated eye movements observed in five patients was supranuclear in type due to involvement of the brain stem. They point out that poliomyelitis affecting the brain stem is more dangerous than the purely spinal form, and that ocular involvement is therefore of serious import. The eye symptoms themselves tend to disappear spontaneously. Their conclusions are supported by the reports of previous observers, whose work they summarize.

It would appear that the frequency of eye symptoms, and of all brain-stem symptoms, varies in different epidemics; that paresis of the sixth nerve, usually unilateral and transient, is the commonest complication; and that paresis of the third nerve, rarely total and in most cases occurring as ptosis with or without some degree of external ophthalmoplegia, comes next in frequency. Paresis of accommodation has been noted in other epidemics. Trochlear paresis appears to have been recorded only once in the literature. Pupil changes are frequent, but no systematic study seems to be available. Nystagmus, in conjunction with paresis of the ocular muscles or as an isolated phenomenon, is extremely frequent. Glance paresis is less common. It would also appear that optic neuritis leading to optic atrophy may occur. The authors conclude that eye symptoms, though benign, are important as expressions of a highly localized and dangerous form of poliomyelitis.

[1] *Acta ophthal.*, 1946, **24** 295.

THE SENSE OF SMELL

No less an authority than Chesterton[1] has testified to the "brilliant smell of water" and the "brave smell of a stone," as recorded by the nose of the dog. More prosaically, it has been reported that human breath has an attraction for the mosquito[2]; that the catfish is responsive to minced earthworms[3]; and that the wireworm, which might or might not have an equal appeal, is itself moved to an "orientation response" by substances released into the soil by the roots of plants.[4] But whether in the imagination of makers of verse or the tabulations of makers of experiments there has been a lack of precision hitherto in all attempts either to classify the varied stimuli to which the human nose is sensitive or to establish comparative sensitivities as between one species and another. Clerk Maxwell referred to the gap between music and acoustics as "an

[1] *The Flying Inn*, 1914.
[2] Mer, Birnbaum, and Aloub, *Parasitology*, 1947, **38**, 1.
[3] Parker, *Smell, Taste, and Allied Senses in the Vertebrates*, 1922.
[4] Thorpe, Crombie, Hill, and Darrah, *J. exp. Biol.*, 1947, **23**, 234.

untrodden wild." If that verdict could be given, and still in large measure hold good, on the stimuli which please or provoke the ear, it is still more applicable to the sense of smell, to which no such precise concepts as wavelengths and frequencies can yet be applied. Human experiments have suffered from the absence of an adequate vocabulary. The bouquet of wine can only be described as "delicate" or "rare," that of mercaptan, the most pervasive of all odours, as "intolerable"; or, more generally, one smell is roughly labelled as being "like" another. Useful results have accordingly been confined for the most part to the encyclopaedic recording of the strengths at which different known and chemically pure substances can be detected by particular individuals.[3] Equally, but with the notable exception of von Frisch, whose pertinacity in studying the sense of smell in bees established many resemblances to his own, it has been a handicap to the olfactory student of other species that he could not himself be a dog, a mosquito, or a wireworm as the case might be. Observations, in other words, have been either subjective, or based on deductions the validity of which is not always evident.

Into this confusion Prof. E. D. Adrian has introduced the same precise methods of electro-neurological investigation which have already been applied with success to the senses of vision and hearing, and for that matter to the study of cerebral rhythms. It is a natural and at the same time a promising line of investigation, and in the recent Alexander Pedler Lecture of the British Association Prof. Adrian gave a preliminary account of the results already achieved. With the exploring electrode in the nerve fibres carrying the integrated messages from the olfactory bulb, the electrical changes accompanying a sequence of impulses have been recorded in the form made familiar by the encephalogram, and also on gramophone records, from which changes in response with the passage of time can be audibly picked out. Rabbits and cats, heavily anaesthetized, have provided the test subjects, and one difficulty has been that the degree of anaesthesia has some quantitative effect on the responses obtained. Prof. Adrian has been able to show, however, that the olfactory receptors of the cat respond in some degree to a current of air which, to the human nose at least, is odourless. This he takes tentatively to mean that, in addition to specific stimuli, there is also some general stimulus due to movement. Nor have comparisons between his two classes of subject been without interest. The rabbit has responded strongly to such smells as those of fresh green grass and dried herbs, and weakly to "disgusting smells." On the other hand, the cat seems relatively indifferent to flowers, but strongly responsive to such odours as those from rancid oil and decaying frog. As Prof. Adrian was careful to point out in this first communication, "a great deal more has got to be done." But it is encouraging none the less that the exact methods of physical recording should at last have been introduced into this confused and difficult subject.

PEPTIC ULCERATION

It is wise to remind ourselves from time to time of the established facts of any disease that is perennially discussed and for which new forms of treatment are being constantly introduced. This is particularly true of peptic ulcer, and the necropsy room is a good place in which to begin. Gibbs[1] has recently reported on 219 cases of peptic ulcer which were seen in a series of 2,301 consecutive post-mortem examinations. His paper does not reveal anything very new, but it does emphasize the characteristics of the disorder. Thus, the ulcer cases comprised about 10% of all necropsies. Most of the deaths from duodenal ulcer occurred in the five years before 50, whereas most of the deaths from gastric ulcer occurred in the five years after 50. Haemorrhage occurred in 16% of the cases, and it was the associated arteriosclerosis, which was present in 40% of the whole series, that materially altered the prognosis of this catastrophe.

Many peptic ulcers cause no symptoms at all; in Gibbs's series 58.5% of the patients had not complained of dyspepsia. This is important when we compare different forms of treatment, for relief of pain is an inadequate criterion, and we require a method of comparison which relies on objective evidence. In an endeavour to find such a yardstick Cummins, Grossman, and Ivy[2] studied the healing-time of peptic ulcer in a series of 69 cases of duodenal and gastric ulcers. All the patients were treated similarly, and healing-time was considered to be the time taken for the disappearance of an ulcer crater as shown by serial *x*-ray examinations. The presence of deformity, tenderness, or irritability was disregarded. The series is not large, but it is larger than many similar series recorded in the literature. The material was selected in that all but one of the patients were in the Services, so that the younger age groups predominated and most of the patients had had symptoms for only a relatively short time. The healing-time adopted by these authors was not the minimum time, for the interval between the first and second *x*-ray examination was at least 28 days. The average healing-time for 63 duodenal craters was 40 days, while for 6 gastric ulcers it was 42 days. Unexpectedly, these figures were not materially influenced by the size of the original crater, by the age of the patient, by duration of the symptoms, or by a history of previous relapses. The wide variation about the mean in this small series is shown by the fact that one case healed in 13 days, whereas another took 213 days.

Any treatment for peptic ulcer must do three things: it must speedily relieve symptoms, it must heal the ulcer crater, and it should prevent relapses. It is this last requirement which has shown the inadequacy of all forms of treatment so far, and for this reason more attention is being paid to the behaviour of the stomach, normal and abnormal, under varying conditions. Sandweiss and others[3] have studied the nocturnal gastric secretion in 38 normal subjects and 29 patients with duodenal ulcer. Contrary to the findings of other workers, they observed that the volume and acidity of the gastric juice secreted during the night did not differ between normal subjects and patients with uncomplicated duodenal ulcers. Musick and his associates[4] investigated the use of the caffeine test meal introduced by Ivy.[5] They confirmed that, whereas in normal subjects there is a rapid fall in secretion after the peak has been reached, in ulcer subjects there is prolonged hypersecretion. This phenomenon was most marked in patients who had recently had a haematemesis, and they agree with Ivy that the test may be a valuable measure of an ulcer's degree of activity. Both these papers demonstrate the many factors influencing gastric secretion. These may be mental, biochemical, or mechanical, such as the position of the tip of the tube. Most workers realize that the fractional gastric analysis as introduced by Bennett and Ryle gives an incomplete picture of gastric secretion; in the elucidation of a case of anaemia it has to be replaced by a histamine or insulin secretion test. Possibly in cases of suspected peptic ulceration some test such as that described by Ivy and by Musick will be found to give more useful information.

[1] *Quart. Bull. Northwest. University Med. Sch.*, 1946, **20**, 328.

[2] *Gastroenterol.*, 1946, **7**, 20.
[3] Ibid., 1946, **7**, 38.
[4] *Sth. med. J.*, 1946, **39**, 651.
[5] *Amer. J. Physiol.*, 1944, **142**, 107.

THE HARVEIAN ORATIONS, 1656-1947

A STUDY IN TRADITION

BY

W. J. BISHOP, F.L.A.

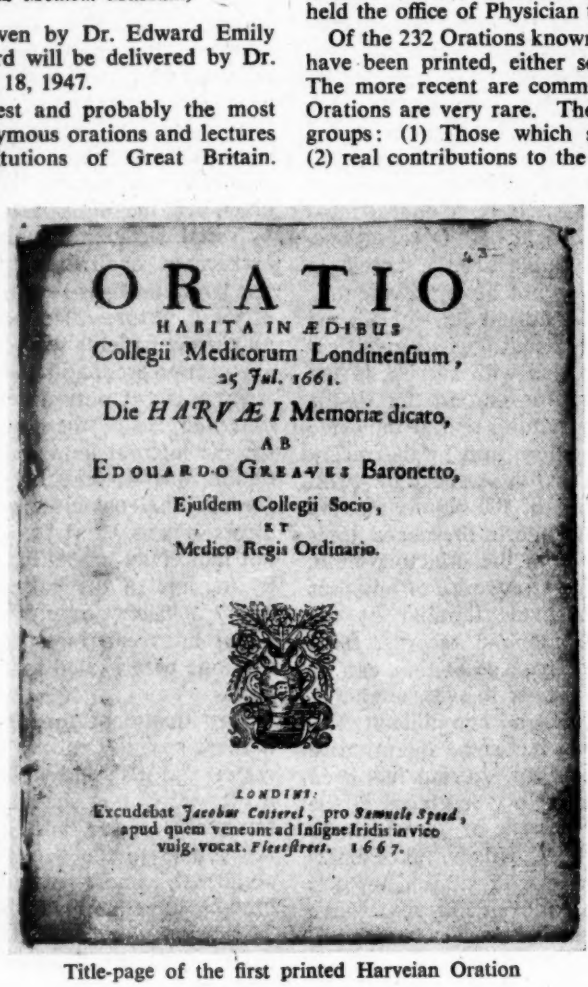
AND

F. N. L. POYNTER, B.A., F.L.A.

(From the Wellcome Historical Medical Museum)

The first Harveian Oration was given by Dr. Edward Emily in June or July, 1656, and the 233rd will be delivered by Dr. C. E. Lakin on St. Luke's Day, Oct. 18, 1947.

The Harveian is one of the oldest and probably the most widely known of all the many eponymous orations and lectures connected with the medical institutions of Great Britain. William Harvey gave to the College of Physicians during his lifetime his patrimonial estate of Burmarsh, in Essex, then valued at £56 a year. In the deed of trust dated June 26, 1656, he directed that "once every year there shall be given . . . an oration in Latin publicly in the said College, wherein shall be a commemoration of all the Benefactors of the said College by name . . . with an exhortation to the Fellows and Members to search and study out the secrets of Nature by way of experiment." An honorarium of £5 was to be paid to the Orator, and only in 1939 was this raised to ten guineas. For many years it was apparently the custom to nominate as Orator the most senior of the Fellows who had not held the office, but latterly the appointment has been made on other grounds than that of mere seniority. The actual appointment, which was originally vested in the President, the two senior Censors, and the two senior Elects (an order which died out in 1860), is now made by the President alone.


ORATIO
HABITA IN ÆDIBUS
Collegii Medicorum Londinenſium,
25 Jul. 1661.
Die HARVÆI Memoriæ dicato,
AB
EDOUARDO GREAVES Baronetto,
Ejuſdem Collegii Socio,
ET
Medico Regis Ordinario.
LONDINI:
Excudebat Jacobus Cotterel, pro Samuele Speed,
apud quem veneunt ad Inſigne Iridis in vico
vulg. vocat. Fleetſtreet. 1667.

Title-page of the first printed Harveian Oration

There are gaps in the yearly sequence of Orations, for in the first fifty years of its existence only twenty were delivered and only seven published. The last fifty years, on the other hand, presents an unbroken continuity, in spite of the two most disastrous wars in the world's history; but the second of these did force the College to make one great departure from tradition when Sir Edmund Spriggs delivered his Oration at the Royal Infirmary, Manchester, on St. Luke's Day, 1944.

A Few Interesting Facts

In earlier times Fellows were not infrequently called upon to deliver the Oration more than once. Two Harveian Orations were given by each of the following: Samuel Collins (1665, 1682), Charles Goodall (1694, 1709), Anthony Askew (1758, 1762), William Cadogan (1764, 1792), Sir Henry Halford (1800, 1835), and Sir James Alderson (1854, 1867). Walter Charleton was Orator three times, in 1680, 1701, and 1705, but the record is held by Walter Harris, with four Orations, delivered in 1699, 1707, 1713, and 1726. Charleton thought it a fact sufficiently remarkable to mention on the title-page of his second and third Orations that his age was 81 and 85 respectively at the time of their delivery. As contrast to this is the extreme youth of others, such as Charlton Wollaston, who was Harveian Orator (1763) at the age of 30 and died a year later.

Some very interesting sidelights on medicine as a hereditary profession emerge from a study of the list of Orators. William Heberden the elder was Orator in 1750 and his son William in 1809; John Latham in 1794 and his son Peter Mere in 1839; Richard Warren in 1768 and his son Pelham in 1826; George Rolleston in 1873 and his son Sir Humphry in 1928. Sir J. Russell Reynolds (H.O. 1884) was the grandson of H. R. Reynolds (H.O. 1776), but the most extraordinary instance is provided by the Monros, four generations of whom gave the Oration: James (1737), John (1757), Donald (1775), and Edward Thomas (1834); moreover, all four were noted alienists and all held the office of Physician to Bethlem Hospital.

Of the 232 Orations known to have been given since 1656, 163 have been printed, either separately or in a medical journal. The more recent are common enough, but some of the older Orations are very rare. They were divided by Osler into three groups: (1) Those which simply fulfil Harvey's injunction; (2) real contributions to the literature of the physiology of the circulation; and (3) those in which the Orator, after a few preliminary words of praise, discourses upon the work in which he is most interested. Not all of them fall naturally into one of these groups. At various times, especially in the period 1750–1850, the Harveian Oration fulfilled many of the functions of the Presidential Addresses, which were not given regularly until about 1870. In addition to the praise of benefactors many Orators comment on current trends in medical politics and education and include obituary notices or tributes to Fellows recently deceased. Several Orators have made valuable contributions to the biography of Harvey or to the history of the discovery of the circulation. Among the best Orations in this respect are those of Sir H. Acland (1865), Sir G. Paget (1866), G. Owen Rees (1869), T. K. Chambers (1871), G. Rolleston (1873), Sir E. Sieveking (1877), J. W. Ogle (1880), Sir H. Johnson (1882), Sir J. R. Reynolds (1884), J. F. Payne (1896), Sir R. Crawfurd (1919), H. R. Spencer (1921), Arnold Chaplin (1922), Sir W. Hale-White (1927), Sir H. Rolleston (1928), and Sir W. Herringham (1929).

The Oration has been delivered by some "so obscure as to make their appointment to that post their only claim to fame, and by men of such reputation as to make it their smallest title to distinction." The names of Akenside, Arbuthnot, Garth, Mead, Heberden, and Baillie are known to all; but who has heard of John Hawys, Charles Bale, Robert Hopwood, and Charles Feake?

Some Early Orators

The first Oration, that of Edward Emily (1617–57), was delivered some time between June 21 and July 28, 1656. The text has not survived, but Emily is said to have expressed himself a little too freely on the subject of the Army and the Commonwealth, a dangerous topic in 1656, and a vote of disapproval was passed and duly recorded in the Annals. His indiscretion led to the ruling that all future Orators submit their papers to the President for his approval, but this has long been ignored.

The second was given by Edmund Wilson (c. 1615–57) in June, 1657, a few days after the death of Harvey. It was not published, but it is known that Wilson took the opportunity to deny the spreading rumour that Harvey, to lessen his sufferings, had hastened his death by taking opiates. It is a curious

coincidence that the first two Harveian Orators died within a few months of fulfilling their office.

Daniel Whistler (1619–84), the third Orator (1659), is remembered for the first clinical description of rickets. He held in succession the offices of Registrar, Treasurer, and President of the College, not entirely to the advantage of the College funds, and his conduct was censured in the Orations of Walter Harris (1707) and John Hawys (1721); but his friend Evelyn thought him "good company and a very ingenious man." Thomas Coxe (1615–85), Orator in 1660, is warmly referred to by Thomas Sydenham as "the patron and promoter of my first endeavours."

The fifth Oration, that of Sir Edward Greaves (1608–80), delivered on July 25, 1661, was the first to be printed. It appeared as a slim quarto of 32 pages in 1667. According to Sir Norman Moore, it "contains a few facts and many conceits, but some of these are happy. He says that before Harvey the source of the circulation was as unknown as that of the Nile, and compares England to a heart, whence the knowledge of the circulation was driven forth to other lands." The original manuscript is in the British Museum (Sloane 302).

The sixth Orator, Nathan Paget (1615–78), was the familiar friend of Milton, and among the guests at his Oration was John Evelyn, who records the fact in his Diary. Let it be recorded to the honour of Samuel Collins (1617–85), Orator in the Plague Year of 1665, that he was one of the physicians who remained in London throughout the epidemic. Happily, he survived to deliver the Oration a second time, in 1682.

Notable Orations

There are many remarkable features about Richard Mead's Oration of 1723. Not only was it the first to appear in an English translation (1763) but a French version appeared as late as 1774. The Oration proper, a brief argument in defence of the status of the physician in Greece and Rome, has been confused by eminent medical historians with the *Dissertatio de nummis* with which it was first published. This illustrated essay on ancient medical coins was not even Mead's own work, but that of Edmund Chishull, divine and antiquary (1671–1733). Mead's remarks on the high prestige of the ancient physicians led to a "pamphlet war" with Conyers Middleton, the Cambridge antiquary. In 1761 the elder Heberden found among the Harleian MSS. a final unpublished "Defensio" of Middleton's in which Mead was referred to in the most generous terms. He had a "few copies printed to be given away," and so publicly vindicated the honour of the medical profession and of one of its staunchest champions. The Oration (1751) of the eccentric Sir William Browne (1692–1774) is one of the finest from the typographical point of view. It has a handsome engraved title-page and the first page of the text bears a head-piece representing the Sheldonian Theatre at Oxford, the Senate House at Cambridge, and a view of the old College of Physicians in Warwick Lane. The Oration of Robert Taylor (1755), one of the most polished and elaborate of any, was the medium for disseminating the favourable opinion of the College with respect to inoculation for smallpox.

Contemporary Comment

With the rise of the medical journals in the early part of the nineteenth century we are provided with a wealth of contemporary comment on the Orators and their Orations. These are always interesting and sometimes startling. Thus, the *Lancet* of June 29, 1833, records that "the Harveian Oration was delivered at the College of Physicians, Pall Mall East, by Dr. Paris, on Tuesday afternoon last. It consisted of the usual twaddle uttered on such occasions. The meeting ended in a jollification, and the proceedings have been duly recorded in the theatrical portion of the columns of the daily journals."

Perusal of John Elliotson's Oration of 1846, which is a veritable apologia for mesmerism and for his own conduct with regard to it, recalls one of the bitterest episodes in British medical history. The Oration was delivered in Latin, but in order to give his views wider publicity Elliotson had it published in both Latin and English versions simultaneously. Apart from topical references to the cholera epidemic of 1849 (Wilson, 1850), the Crystal Palace (Spurgin, 1851), medical politics (Alderson, 1854), and the Indian Mutiny (Wood, 1858), there is little of note in the few remaining Latin Orations. The last of these to be printed was that of A. J. Sutherland in 1863, and in the following year Robert Lee delivered the last Oration in Latin. This was not printed, but the original manuscript is preserved in the College Library.

Sir Henry Acland in 1865 made the final break with tradition by delivering and printing his Oration in English, and since that date no Orator has ventured to use the Latin tongue. The effect of this has been to instil reality into what had become a rather stultified performance, and the fine series of English Orations since that date contain many valuable observations on the advances made in physiology and clinical medicine, for of recent years Orators have taken the rational course of departing boldly from the somewhat narrow bounds laid down by Harvey in 1656, a course of which the great experimenter would surely have approved.

We are indebted to Dr. E. Ashworth Underwood, Director of the Wellcome Historical Medical Museum, for permission to reproduce the title-page of the very rare Harveian Oration of Sir Edward Greaves from the copy in his care.

PSYCHOLOGICAL ASPECTS OF ACCIDENTS AND ACCIDENT PREVENTION*

BY

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Up to now there have been few organized attempts to understand either the emotions and instinctive impulses underlying road accidents or the social forces involved. Perhaps we have not sufficiently regarded accidents as an integral part of our community life. There is a temptation to regard them almost as interlopers, and it may be for this reason that they have not been studied systematically in their natural setting in the community.

Laboratory experience has demonstrated some relationship between accidents and fatigue, lack of experience, and poor general health. Road accidents, in particular, tend to occur more commonly among drivers who are not in good health or who are unskilful, among older people and the inexperienced young drivers, and among those with delinquent records. It is noticeable that nearly all these classes include complex combinations of human attributes or influences. Then there is so-called "accident proneness" to be considered. Scientific studies of drivers showed in one case that 10% of a group of drivers was responsible for 60% of all its accidents; and in another that 20% of the drivers had an accident rate 3½ times as high as the remainder. Certain laboratory tests of quickness of reaction and of muscular co-ordination have shown that poor performance in the tests was four times as common among the accident-prone group as among the remainder. Less decisive correlations were obtained with tests of intelligence and of temperament.

Accident proneness is related to lack of quickness, slow reaction time, poor muscular co-ordination, poor intelligence, instability of temperament, and distractability. Once again, every one of these factors is complex and by no means constant in each individual all the time. For example, what is meant by instability of temperament and distractibility? During the recent war, when the Army had to select many thousands of men to become drivers, it was found that a combination of laboratory tests with careful assessment of past history and of present temperament achieved an encouraging success in reducing both the period of training and the occurrence of accidents during training. On the whole, men and women of under 40, with good civil records, a healthy attitude towards military service, with average intelligence, enjoying good health, and who did well in the tests, were the most successful. However, this type of person is wanted for every other responsible job, and

*Abridged from a paper read to a joint session of the Safety Education and the Home Safety Sections of the Royal Society for the Prevention of Accidents' Silver Jubilee Congress at Brighton on Oct. 8.

perhaps common sense would have got us as far. But much has been learnt in establishing even this piece of exact knowledge.

One large-scale inquiry into the causes of military road accidents over a period of six months failed to reveal any accident-prone drivers, but it may be that the period of time was insufficient. It did reveal certain accident-prone military units, and this observation opens up a whole new field for speculation: Why is it that certain groups of men are more liable to accident than others working under identical conditions?

The Sociological Approach

Accidents need to be studied as social events. They occur as integral parts of our daily life in the community; we expect them and make provision for them, and they are as much social events as any other happening in the group. Practical difficulties arise out of the need to study large numbers of people in order to provide enough accidents from which to draw conclusions, to keep them under notice for a long time, to study relatives and friends of the principals, and to study the onlookers. Moreover, the public dislikes being studied; which means that any project will need to be introduced with great wisdom and care.

The tests of temperament and emotional stability used up to now have mostly been of a static, question-and-answer type and have not given decisive results. The method of study needs altering to include a systematic study of the emotional life of participants and their past history up to the critical moment when they all converged for the final drama. The onlookers (the people in the street) must not be left out, for they were present and may be an influence to be reckoned with. Lastly, and most important, our study should include facts and ideas not only as they appear to a dispassionate outside observer but as they appear to the people involved in the accident themselves. Fantasy plays a large part in the lives of most of us; and fantasy distorts objective reality all the time and in ways that few of us clearly appreciate.

The differences in attitude shown by pedestrians, motorists, and cyclists owe much to distortion by fantasy. Therefore it is vitally important to learn more about what being on the road does to the individual who is walking, driving, riding, or merely standing and looking on, and to find out how road users influence each other. Much can be learnt by studying children, whose component forces are apt to appear with less concealment than those of adults. It is easy to see how the natural properties of childhood lead to danger. This subject was dealt with by Dr. Susan Isaacs in a paper read to the Royal Society for the Prevention of Accidents in 1938, and I cannot do better than paraphrase her main conclusions.

Child Psychology and the Road

Dr. Isaacs drew attention to the adventurousness of young children, their impulsive curiosity and need to gain mastery over things. They possess a relative lack of prudence and foresight, a span of attention too narrow to take in all the details of a crowded street, and a rudimentary perception of space and time—i.e., they cannot estimate the speed of an oncoming car.

Other observers have noted the child's lack of understanding of mechanical cause and effect and of impersonal events: to a young child the wind is a person or is blown by a person; he endows all outside happenings with a personal and often human significance.

Dr. Isaacs observed that toy cars and trains are used by young children to symbolize their parents and friends and often their own feelings. The boy who crashes his toy car noisily into his sister's doll's-house symbolizes a wealth of feeling. From this it is only a short step to the child's endowment of real vehicles on the road with his own feelings or with the attributes of his parents. For him traffic may represent formidable objects of great power—like Daddy when he is angry, or his own internal feelings of anger which are so terrifying to him.

Dr. Isaacs pointed out that children make a positive contribution to their own danger. The child's normal sense of helplessness contributes to bravado: he must test himself and the traffic (which may symbolize his fantasied fears). The child who is unsettled or insecure or basically not happy in his relationships at home is particularly prone to bravado, to suspicion, or to test out whether the oncoming car (which may represent a parent) will respect him or not. He may wish to defy, attack, or annoy the motorist, who in the child's mind may not be clearly distinguished from the policeman or a fussy mother. Even more than this: there may well be a real and deep desire to be hurt. Just as some children attract bullying, others invite punishment. In human nature, the not uncommon impulse of a child to displace his parent is followed by a great sense of anxiety and guilt—traditionally in mythology, usurpation of the father's position is punishable by death.

What happens if a young child by the side of the road has a sudden impulse to defy a car because in fantasy it represents his own father? The situation is potentially dangerous, and it becomes more so if the impulse is as quickly followed by remorse, by a desire to throw himself at the mercy of the car or even to invite punishment. It may be argued that this line of thought is leading us into deep waters, but such mechanisms and symbolical actions are not uncommonly encountered in disturbed and maladjusted children. Dr. Isaacs sums up the situation with moderation by remarking that some children have deep impulses stronger than their powers of intelligent control.

The importance of admitting the possibility of these childish mechanisms lies in the way such attitudes tend to linger on and influence adults in strangely uneven and unexpected ways. Most grown-ups are aware of little islands of childishness within themselves; many will pride themselves on retaining some of the magic of childhood. This state of incomplete maturity or lack of perfect balance makes it doubly important to recognize that reason and conscious knowledge do not govern everything; and that accidents should be understood, if possible, not only in their total social setting, but also in terms of what they really meant to the participants and what the parties meant to each other in fantasy as well as in fact.

Type of Inquiry Required

A few weeks ago, in a quiet side-street in St. Marylebone, an elderly lady began to cross the road in a slow, rheumaticky manner about midway between two pedestrian crossings set 100 yards apart. Just at that moment the traffic lights across Baker Street, 50 yards away, flashed green, and an open, cigar-shaped sports car with no mudguards roared into our street, driven by a youth of about 18. As a fellow pedestrian my personal sympathies were with the old lady, though the stickler might assert that she should have dragged her rheumaticky self 50 yards to use the pedestrian crossing. The youth had ample time to apply his brakes partially and slide gently behind the old lady, but he delayed action until the last moment, stamped on his brake and pulled up violently with brakes and tyres screaming, exactly behind her. He put out his head and said something unkind, audibly rammed in his gear lever, and went off in a roar of indignation. The old lady looked round vaguely and went on her way without comment.

There are many questions urgently requiring answers—e.g., did having control of a car make any difference to that young man? Was this a sample of his normal behaviour? What was his relationship to his mother? What did the old lady mean to him, if anything? Did she symbolize for him at that moment his own mother, or perhaps authority in general? Was he inflicting on the head of an innocent substitute all the hostility stored up against another person to whom he dared not appear as he felt? Was his behaviour merely due to irritation at the interruption of a dream of power and speed which he was deriving from his car? Again, is a sports car in the hands of a young man more dangerous than a saloon car of equal power? Thirdly, were the onlookers being asked to witness the prowess and cleverness of this young man? Would it have happened had they been alone in the street? Fourthly, was the old lady really as ignorant of wise behaviour on the road as she appeared to be? Did the young man perhaps symbolize anything to her—her own son, or something unpleasant? Had she any personal reasons for courting danger or death?

It would be foolhardy to dismiss this incident merely as boorishness on the driver's part meeting stupidity of the old lady. To do so would prevent any possibility of ever coming to understand causes. But there is one other unanswered

question which seriously reflects on the present state of our knowledge: Does this kind of happening bear any relation to accidents proper? One feels that both parties are of the stuff of which accidents are made, but there is no proof of this.

More General Aspects of Behaviour on the Road

There are more general inquiries besides intimate studies: what effect has driving a car on the ordinary man and woman? and what effect has facing an oncoming car? We know that cars symbolize power without effort, speed, adventure, exploration, and independence—all characteristics more in line with male psychology than with female. Is there, after all, a genuine difference between men and women drivers, as mysogynists maintain? It needs exact investigation. If a car ministers to a young man's sense of power and his more animal characteristics, is our friend in the sports car the modern equivalent of the classical centaur, with the head of a man and the body of a horse and behaviour compounded of both (but without the centaur's intellectual propensities!)? Some women feel this instinctively and sense that driving a car is in some way a threat to their femininity. Such women are apt to treat their cars as dangerous animals needing strict control.

The implication of all this may be that people react to driving in a similar way to their reaction to their own instinctive and emotional impulses—a principle that applies equally well to pedestrians and cyclists. The mature, well-balanced person faces the road without a qualm; he estimates the danger accurately and is confident of his powers to cope with it. He also faces his social responsibilities squarely. The immature, unstable person reacts not only to the traffic but at the same time to his own fantasies of violence, aggression, fear, and power as symbolized by the traffic. Consequently, the likelihood of the unstable person doing foolish and inappropriate things is greatly increased. It is probably fair to conclude that road accident prevention is intimately bound up with the broad principles of mental health to a degree far greater than is generally realized in both its personal and its social aspects.

Practical Applications

One practical result of demonstrating the deeper emotional significance of accidents may be to show that a high proportion of so-called accidents not only are deeply motivated but also fit into the life pattern of one or more members of the group. The next task is the more accurate prediction of dangerous emotional forces, and I believe that at last psychologists possess techniques of investigation to enable them to undertake the task profitably. The chief deficiencies are money and a clear mandate from the public to go ahead.

It is time for a series of large-scale investigations on carefully chosen sections of the community into the psychological forces behind every accident in their individual and group significance, both real and arising from fantasy. This would involve studying a great number of people and could scarcely be completed on a voluntary basis. Whether it would be possible to get the same statutory powers to investigate as for rail and air accidents is very doubtful, but it may be necessary to seek these. This investigation would be very unpopular with the public unless presented to them with great care, and to do it well would involve expenditure of much time and labour. We must weigh these depressing considerations against the continued and appalling loss of life and destruction at present. The public conscience is dulled by the very fact that road accidents are so commonplace.

Safety Education

This suggested investigation would quite possibly lead to the prevention of accidents at their source so far as the "human elements" are concerned; but this is a long-term aim which would not easily be reached. A more immediate effect would be on the propaganda and public education campaigns. It is difficult confidently to direct educational work without exact knowledge of the dynamic forces involved.

Nowadays much stress is laid on "training children to obey," the modern feeling being that though children will no longer obey at once for authoritarian reasons (if they ever did), they can at least be trained to obey (if the educator is cunning enough) as a kind of conditioned reflex. It is often hoped that obedience and road sense can be so instilled by maxims as to become part of the child's second nature. For instance, by harping on danger it is hoped that automatic avoidance of danger will result. Quite apart from the fact that, psychologically speaking, this is a very doubtful proposition indeed, avoidance of danger is not the real aim, which is more fundamental—namely, to strengthen the positive factors on the side of safety and to remove morbid motives leading to the active seeking of danger.

Much of safety education still relies on authoritarian and horrific methods, both of which are effective in reasonable doses with well-balanced children but positively dangerous with maladjusted and unhappy children. The former method challenges children to defy authority; the latter challenges them to dare to test out the fear aroused. Not only children but many adults react unhealthily, and no one can estimate the potential damage of these methods. Similarly, repetition can be overdone. A report issued some time ago by the L.C.C. said that safety education required "damnable iteration." If the iteration really were damnable it is a safe bet that the results would be equally damnable.

Road-safety Films

A recent inquiry into the effect of three road-safety films raises certain points of importance to the whole field of safety education. This inquiry was made by the Tavistock Institute of Human Relations at the request of the Petroleum Film Bureau, to whom I am indebted for permission to quote the results. The investigators aimed at spontaneous expression of attitude by children divided into groups of ten and engaged on chalk drawings, completion of stories, making up games and plays, and discussion, before and after seeing the film.

It appears to be very relevant to the success of the film—or, indeed, possibly to the success of any other educational technique—whether the children are able to enjoy it freely, express criticism openly, and join in discussing its story and problems afterwards; all of which will affect the amount of assimilation and change of attitude. It may be risky to generalize, but those children from stricter schools reacted less unfavourably to the didactic or direct teaching sequences of the films than those from freer schools. I have deliberately used the expression "less unfavourably" because it is not sufficiently recognized that normal children not dragooned by rigid discipline react in a hostile way to being talked down to, which may go far to explain many difficulties experienced by some teachers in schools.

It is striking that the children's own ratings of the three films were in reverse order from those of an experienced adult reviewer, who failed to recognize the strongly negative or hostile reactions which parts of the films evoked in the children. The latter responded by mistrust to being talked down to and by resentment to seeing a child depicted who was obviously foolhardy. Their hostility was shown by open criticism, by rejection, and by omission from play and story-making. They also appeared to try to get even with the adults by being very critical of all the small technical mistakes which they noticed.

The films revealed the possibilities of an effective indirect approach by stimulating thought about social problems arising out of the film—e.g., playing on bomb sites, the lack of playing space, co-operation with motorists in quiet roads, and so on. Such thinking and discussion may be more fruitful than even a direct teaching technique.

The report of the Tavistock Institute of Human Relations recommends that films be used as preludes to discussion, games, and other spontaneous play activities in which children can work out their own ideas about road safety. In particular, direct teaching sequences and pointing the moral should, if wanted, be left to the teacher and not incorporated in the film.

An Indirect Approach.—The observation that the films indirectly stimulated interest in such topics as playing-fields for crowded areas leads to the speculation whether good results could not be obtained by showing story or narrative films of everyday life in which the road-safety theme appears as an incidental sequence; then, by the discussion-play technique, to work on the ideas stimulated in the children—a possibly difficult but theoretically sound and promising technique.

Some Psychological Ideas on Educational Methods

Can some of the findings of the film inquiry be applied in principle to other methods of safety education? The primary aim is to harness, as it were, the child's sense of responsibility; to make him whole-heartedly on the side of responsible behaviour, not merely as a sense of duty imparted by parents and teachers, with the jungle half of him in rebellion, but heart and soul. Our greatest natural ally is the child's own desire to grow up. Methods which place responsibility on the shoulders of children in a way which they can bear are the safest means of conveying ideas that are charged with emotion; finding out for themselves by play is one example of such a method. Didactic, dogmatic, or direct teaching methods are the least satisfactory for conveying emotionally powerful ideas such as discipline, danger, and death.

The negative aim of avoiding provoking hostility is at least as important as the more positive aims. Hostility may be aroused by the ideas themselves, by the method of conveyance, and by the person conveying them, and when aroused tends to irradiate the whole subject, thus leading to an increase in danger to the unstable child.

The ordinary straightforward classroom teaching method is probably best kept mainly for factual education and for invoking the child's reason and sense of responsibility. This method is less effective for dealing with the dangerousness of roads or for presenting the antithesis between safety and danger, if only lest we succeed too well and persuade the children that the aim of man is to be safe and to avoid danger. The facts and statistics of danger, presented reasonably, can be handled by direct instruction. There is also an ample field for classroom methods in combating the often surprising ignorance of why traffic exists and of the part it plays in everyday life. Few children realize how dependent they personally are on the free and safe circulation of vehicles on the roads and of the roles of traffic regulations and policemen. We also need greater widespread knowledge of how vehicles work, of what they can and cannot do, of the limitations of the driver, and of what the road looks like to the driver compared with the pedestrian. There is nothing new in this; many authorities have been using these methods for years.

Such teaching must take care to avoid moral judgments suggesting that it is "good" to obey traffic rules and "bad" to dart into the road. In teaching, to link road behaviour with morals is to risk a negative response, especially from the unstable child, and may, like overstressing the horrific, actually increase the danger to that child.

Ideas of emotional importance such as danger, damage, injury, death, and bereavement lend themselves to a more indirect technique by films, plays, discussion, and the spontaneous production of ideas by groups of children. Just as accidents often arise in the social group, so it is reasonable to seek their prevention by group as well as by individual methods. In particular the moral ideas associated with road behaviour—and all behaviour has inescapable moral implications—are best left to spontaneous evolution by the children themselves.

Conclusion

Good safety education achieves much, and in principle what has been said here will apply also to adults, and in the home and factory. When education has harnessed to it all the knowledge which could be acquired from an investigation into the inner emotional implications of accidents and their significance to the social group, who knows how much more could be achieved? That is why so much emphasis has been laid throughout this paper on the need for a new approach before the full contribution of psychology to the prevention of accidents can be realized.

The shortage of doctors in Berlin has caused the Allied *Kommandatura* to authorize the city *Magistrat*, according to a report in *The Times* of July 26, "to set up a committee to deal with the applications of medical men who have been convicted of criminal offences to be restored to the register." The applicants must first have served their terms of imprisonment.

FOOD AND DRINK INFECTIONS

Conference of Representatives of Local Authorities

A conference of representatives of local authorities of England and Wales and Northern Ireland, including the chairmen or members of health committees, medical officers of health, and sanitary officers, was summoned in London on Oct. 9 by the Central Council for Health Education to discuss food and drink infections.

Lord Woolton, the chairman, said that there were between 1,500 and 2,000 deaths annually in England and Wales due to bovine tuberculosis conveyed by infected milk. When he was Food Minister he had spent many anxious weeks investigating this problem, and had come to the firm conclusion, from the evidence available to a Government department, that there ought to be compulsory pasteurization in this country. Was it too much for local authorities to accept the same standard of responsibility for the milk consumed in their areas as they already accepted for water? The large number of deaths of young children from diarrhoea and enteritis was also lamentable. Most of these deaths were due directly or indirectly to food or drink infections. A message was then read from the Minister of Health in which he stated that the information obtained by his department made it ever more clear that a great part of infection could be avoided by scrupulous attention to cleanliness in equipment, clothing, and person at all stages of manufacture and handling of food and drink.

The Problem Stated

Sir William Savage said that in some cases, as with staphylococcal infections, the reservoir of infection was from human sources; in others, as in the *Salmonella* group, it was derived from animal sources, particularly pigs, ducks, and small rodents, while in the case of botulism the organism was in the soil. The greater the manhandling of food the greater the likelihood of infection. Outbreaks of food-poisoning arose rarely from pork, but much more often from ham, which was handled more. He had frequently come across cases in which a food as originally prepared was perfectly harmless, but had become poisonous after a lapse of time because it was left at a temperature which encouraged the rapid multiplication of organisms. Food-poisoning the source of which was a diseased animal was not very common; he recalled that the first outbreak he ever investigated, forty years ago, was due to brawn from a pig which was so ill that it had to be carried to the place of slaughter in a milk float. Much had been done under Lord Woolton's administration to concentrate slaughtering in a selected number of slaughter-houses, some 500 instead of the former thousands; but it was now time that these selected slaughter-houses, which were often cramped and difficult to supervise, were all made really satisfactory premises.

The growing popularity of communal feeding-places, Sir William Savage continued, while advantageous from many points of view, had its disadvantages. Washing-up arrangements were often far from satisfactory. There were too few tanks, and the tanks were not kept to their assigned purposes—one for washing and another for rinsing. Utensils were in short supply, and often went back into circulation after perfunctory cleansing. The choice and strength of detergents were important, and the temperature of washing-water was a point too often disregarded. Food when prepared must be kept cool in refrigerators working at the proper temperature. Medical examination of all food handlers he considered to be impracticable, for if it was superficial it would be of no use, and if elaborate, involving bacteriological examination of stools and so forth, it would be prohibitive in cost. But it should be a condition of licence of any premises where food was consumed or sold that all cases of illness among the staff were reported to the medical officer of health.

Varieties of Infections

Dr. G. S. Wilson, director of the Public Health Laboratory Service, said that the number of food-poisoning outbreaks reported annually was now some 500, about a sevenfold increase since before the war. Bread was a very uncommon

source of infection, because most bacteria would not grow on the crust of the loaf. Fresh meat, freshly cooked vegetables, and cereals were seldom implicated. The dangerous foods were milk and milk products, cream, synthetic milk, ice-cream, custards, jellies, and trifle, all of which contained nutrient substances for bacteria. Another group of dangerous foods included brawn, pressed beef, stews, and sausages. Gravy, soups, sauces, and shellfish were occasionally responsible. The danger lay in the preparation of foods beforehand, and in leaving them under conditions suitable for bacterial growth, often in a warm kitchen.

Mr. L. H. Lampitt, director and chief chemist of the laboratories of J. Lyons and Co., Ltd., gave an account of the methods of control employed in a great catering firm and the efforts made from every side to ensure cleanliness and wholesomeness. He mentioned that during more than twenty years of war and peace Lyons had never been involved in any major food epidemic, although they employed approximately 20,000 people directly in the manufacture, preparation, and serving of food, and served nearly half a million meals a day. At present food catering encountered many difficulties, and he pointed out the danger of accepting things to-day as normal and basing policy on them.

American Practice

Some account of food and drink hygiene in the United States was given by Dr. Robert Cruickshank. He said that since 1942 the United States Public Health Service had inaugurated courses of instruction for food handlers in many different industries. They had also set up a code with a useful series of regulations, going very much further than anything available in this country at present. The code established certain standards for the handling of food, medical supervision of food handlers, and refrigeration. In this country under the Food and Drugs Act, 1938, there were certain regulations, but these were concerned only with actual buildings and there was very little applying to the food handler himself. Dr. Cruickshank also drew attention to the need for a better system of food storage, and even under present conditions he pleaded for a great extension of refrigeration, particularly for the communal kitchen. The United States in this respect was very much ahead of us, in that refrigeration, both communal and domestic, had been established there for many years, and refrigeration of every kind of food in communal kitchens was a routine.

Dr. Robert Sutherland, medical adviser and secretary of the Central Council, said that there were three major problems: bovine tuberculosis due to infected milk; diseases like typhoid and paratyphoid, and notifiable food-poisoning; and, finally, diarrhoea and enteritis, which caused between 3,000 and 4,000 infant deaths a year. The problem of milk was an administrative one, but it had its educational side in bringing home to people the need for heat-treatment of milk. Public health authorities, pending compulsory pasteurization, should insist upon the boiling of all milk consumed by children in their area, except possibly the milk which came from T.T. herds. With regard to food infections which were the result of some fault in production and distribution, legislation should be reviewed with the object of setting up a code of requirements similar to that established by the U.S. Public Health Service. The Board of Trade should help to meet the requirements of the food-handling industry for equipment and materials to ensure cleanliness and safety. The problem of infantile diarrhoea and enteritis was more complicated because the sequence of events was less obvious, but it was important to make an approach to the housewife concerning the possible conveyance of infection, particularly in homes where there were young infants.

A Comprehensive Programme

Dr. Sutherland went on to say that standards of food-handling, with many commendable exceptions, were low. Many popular restaurants would lose their patronage if only a glass partition separated their dining-halls from their kitchens. The key people were the local authorities and their officers. Committees should be set up in every area to investigate the local position and to take action. Conferences should be arranged, with representatives of the medical and nursing professions, the food-handling industry, educationists, leaders of industry and the workers, women's institutes, and youth organizations.

The Central Council for Health Education was prepared to assist in any effort along these lines. Experts were available to give courses of lectures. A two-tier attack was necessary: the first directed to the supervisors and workers in the industry, and the second to the housewife. It was important that food and drink infections should not be dealt with as an isolated health education problem, but be linked up with all the other aspects of healthy living.

In some general discussion Dr. W. R. Martine (Birmingham) said that in his city 97% of the milk was pasteurized or otherwise heat-treated. Unfortunately, the remaining 3% was never entirely free from risk, and an outbreak of undulant fever had been attributed to this cause. Dr. J. B. W. Rowe (Harrow) said that the British Medical Association for the past four or five years had been hammering very hard at the Government to take up this question of pasteurization, but so far it had succeeded only to the extent that the Ministry of Food had appointed a departmental committee to look into the transport question.

Dr. Leonard Williams spoke of the state of the street markets in London and other towns. These markets were a means of bringing green vegetables to the public at a reasonable price, but he hoped that the distribution of vegetables might be so arranged that street markets could be abolished. It had been said that the medical inspection of food handlers in the United States had been dropped because it was impracticable, but he thought that only a very limited experiment had been made; it was tried out almost entirely on coloured people.

A Guildford councillor, Mrs. Croke, chairman of the Health Committee, described a recent effort made in her town, beginning with an exhibition visited by 7,000 people, following which an approach was made to the various food traders and organizations, resulting in the formation of a guild. Admission to the guild was obtained only by a promise to conform to a code of practice, which went rather further than the law required and insisted on the installation of washing facilities near sanitary conveniences and on the immediate notification to the medical officer of health of all cases of illness amongst the staff. The response had been encouraging.

An effort in Scotland was described whereby food handlers serving large holiday camps had been persuaded, with only a minimum of refusals, to submit to medical examination, including bacteriological examination of excreta, and a number of carriers had been found.

The proceedings closed with some remarks by Mr. H. Lesser, chairman of the Central Council, on the results which might follow so successful a national conference.

An early instance of the beneficial action of shock on mental disease, observed more than a century ago, is quoted by Dr. Claude Lillingston in *Blackwood's Magazine* for October in a biographical sketch of Philippe Pinel, the man who broke the chains of lunatics at the time of the French Revolution. Pinel was born on April 20, 1745, and in 1793 was put in charge of the Bicêtre, a cross between a prison and a hospital, where thieves and assassins lived with lunatics in chains. One of Pinel's patients, not an inmate of the Bicêtre, was a man of letters who imagined himself tired of life. Weighing with an alarming impartiality the various means of committing suicide the one against the other, he had not made his choice when he came to London. Late one night, having at last decided to drown himself, he went to a bridge over the Thames. About to jump into the river, he was attacked by footpads. Though practically destitute, he was furious at being robbed. He was also terribly frightened, and in sheer desperation he put up a gallant fight and escaped. His melancholy was so effectively dispersed by this incident that he forgot all about his intended plunge into the river, and he returned to Paris, where he lived happily enough. Pinel's notes on this case were found among his papers by one of his biographers, Dr. René Semelaigne, but, though Pinel would seem to have been aware of the occasional benefits of shock, he was in principle more in favour of soothing than stimulating his patients—witness his advocacy of tepid baths in preference to the total immersion in ice-cold water inflicted in his time till lunatics were almost frozen to death.

Reports of Societies

SOCIAL MEDICINE AND HOSPITAL PRACTICE

An address on "Social Medicine and Hospital Practice" was given by Prof. J. A. Ryle at a meeting of the Medical Society of the L.C.C. Service, held at County Hall on Oct. 2. Dr. J. R. M. Whigham was in the chair.

Prof. Ryle began with a remark on the neglect of the social background and foreground in hospital medicine. Patients were studied in isolation, remote from their natural surroundings. No complete picture was formed of the patient as a person, or of his illness as distinct from the label attached to it, or of its essential causes, economic or occupational. Pathological diagnosis might be precise, but personal and social diagnosis was defective. Despite the excellence of diagnostic techniques and specialized skills, hospitals were at a disadvantage compared with the experienced family doctor who had known his patient for a long time, had been inside his house, and was aware of his domestic situation, economic status, and the character of his work. A colleague in suburban practice had told him that instead of sending clinical letters with patients to hospital he now sent social letters, describing the patients' circumstances as he knew them.

Hospital medicine had become more and more exercised with clinico-pathological inquiry. Personal and social investigation had lagged a long way behind. The advent of the psychiatrist and psychiatric social worker had remedied the situation to some extent, but not entirely. The study of cases had suffered from an over-concern with pathology to the detriment of the total aetiology and prognosis—by total aetiology he meant much more than an assessment of specific factors, and included consideration of domestic, economic, occupational, educational, and psychological factors, all of which might buttress the specific cause or produce illness in the absence of specific cause.

An idea was current that what could be elicited from the patient himself was good enough. It was not good enough, partly because the patient was not always a good witness, and partly because the clinician was not always patient and skilful enough in interrogating him. Any case history should include not only heredity and occupation, and perhaps geographical and seasonal influences, but also the result of an inquiry into the immediate material environment both at home and at work. The occupation should be described in an intimate way, not merely named, and former occupations should be given if relevant. He was told by the medical officer of one factory that in that factory alone there were six or seven varieties of welding, so that it was not sufficient to put a man down as a "welder." A colleague once wrote a paper on a case of "boiler-maker's lung," only to discover that the patient had been a miner before he was a boiler-maker, and the South Wales mine had probably more to do with his disease than the boiler. Nutritional standards and habits were of obvious importance in assessment. The total social history might not always advance the diagnosis or improve the treatment, but it would rarely fail to contribute something to a better appreciation of the patient as a person, and sometimes it told them almost all they wanted to know, even when the laboratories and *x*-ray departments had failed them.

The Patient as a Person

The information about the immediate material environment of the patient given at hospital often consisted of little more than his address; yet in some conditions, including almost any type of chronic disability, something ought to be known about the situation and type of his house, the room space in relation to the number of occupants, and, in the case of the housewife, the adequacy of her equipment and amenities and her hours of labour and freedom. A great deal might be learned from the personal relationships of patients, from such matters as wages, rent, cost of living, and number of dependants, and the effect upon the illness of a falling income, the fall being due to the illness itself. The proportion of income spent on food, and the calorific value of the food, were also matters of importance. Educational standards should not be neglected, for they affected the patient's understanding of his own illness.

Hospital work, Prof. Ryle continued, was always biased by a concentration on objective methods and also by the fact that only the more serious forms and stages of disease were generally seen. Representative samples of disease were never seen in hospital, but only the worst samples. Hospital material was selected by gravity, by severity, or by interest or some other factor. Therefore judgments founded on hospital cases tended to be distorted. Clinical and social follow-up studies in most hospitals were inadequate. Hospital studies also were detached from healthy population.

The lecturer then proceeded to speak of the work of his own Department of Social Medicine at Oxford. There they were largely concerned with surveys of various types of population. It was a great corrective to clinical predispositions to be working among ostensibly healthy people. While hospitals would always be invaluable units within the total framework of medical and social services, they had disadvantages from their isolation. They were detached from the work of the general practitioner and from the personal and environmental services of the local authority, and also from the less serious aspects and varieties of disease and from healthy groups. Some hospitals had made efforts to compensate for these disadvantages. A good ward sister would fill in gaps in the information about patients as a result of her talks with the patients and their relatives, and now the extra help of the almoner and in some instances of the psychiatric social worker was available. The importance of occupational therapy and rehabilitation was recognized more and more. We were becoming more interested in the total patient, which included his social background. The follow-up departments in diabetes, pernicious anaemia, and cancer cases were further evidence that it was felt to be unsatisfactory to observe patients only for a limited time in a hospital bed. Follow-back methods should also be undertaken to get a better picture of how the illness arose.

Importance of the Almoner

Under the new National Health Service he hoped that the almoner would be relieved of a great deal of her clerical work and would be concerned more and more with case work, organization of after-care, and follow-up studies. Her function would be social diagnosis and therapeutics in parallel with clinical diagnosis and therapeutics. In connexion with teaching hospitals and research she would have still other functions. What he had sometimes referred to as our modern endemic diseases—gastric and duodenal ulcer, chronic rheumatism, hypertension, psychoneurosis—often gave a sense of frustration in the hospital case because of their chronicity and their tendency to recur. The study of their total aetiology had as yet hardly begun. They were clearly due to continuing or recurring causes.

With the help of social pathology and rational human studies and socio-medical disciplines we should begin to balance anew the physical sciences and technologies which had ruled the roast in medicine during the last quarter of a century. The dividing walls between departments had to be breached. The almoner must more frequently be present at the ward round. The physician and house-physician must more frequently visit the almoner's department. The almoner's department and the registration department ought to be next door to each other. In numerous other ways associations of common interest could be brought about. Prof. Ryle confined himself to a single suggestion, that in every large hospital in the country, perhaps once a quarter or even once a month, there should be a conference, sometimes on a case, sometimes on a problem connected with the treatment of patients, and it should be attended by representatives of the clinical staff, the pathological and radiological staff, the almoner's department, the nursing staff, the dietitian, and the record officer. These were, after all, members of a large team. They lived side by side. They were, in fact, a social unit, and should be interested in one another's work, and none of them should feel a Cinderella.

Prof. Ryle's address was followed by papers by an almoner and a psychiatric social worker, and there was some general discussion.

ANEURYSM AND LEUKAEMIA

A meeting of the Medical Society of the L.C.C. Service was held at St. Mary Islington Hospital on Sept. 3. Mr. I. I. PRICE demonstrated a case of popliteal aneurysm in a man of 42 who had had treatment by extraperitoneal lumbar sympathectomy, followed a week later by excision of the aneurysm. In discussing the treatment of this case, Mr. Price remarked on the value of preliminary sympathectomy in increasing collateral circulation. He had, after excising the aneurysm, cooled the limb by the use of an electric fan, but after a few hours found that the cooling was being overdone and that the foot was becoming cyanosed. The fan was therefore discarded, with a speedy improvement of the circulation in the leg.

Dr. A. L. JACOBS considered that there was little to gain from comparing the results of popliteal ligature after gunshot wounds with an operation of election such as Mr. Price had done. He said that he could not understand how cooling the limb could have any desired effect, for while undoubtedly metabolism was reduced by cooling so also was the circulation in the smaller vessels on which the collateral circulation depended. Mr. G. C. DORLING referred to a case of aneurysm of the femoral artery in which, after operation, the affected limb was not cooled but the other limbs were warmed up. The result had been good.

Mr. PRICE discussed a case of embolism in the brachial artery of a woman of 75 upon whom he had operated under brachial-plexus block analgesia. To remove the clot the artery had had to be opened in two places, but was repaired. There was never any danger of gangrene, but the radial pulse did not return for four weeks. He asked whether other members had had experience of brachial embolism, and what happened in cases where no operation was done. He considered that the ideal treatment was embolectomy and sympathectomy. Dr. A. L. JACOBS said that he had seen six cases of embolism in the brachial artery treated without surgery and without gangrene resulting, but he thought it probably best to give a dose of papaverine and observe the result. Arteriectomy was often the best operation in that it abolished the reflex spasm in the other arteries of the limb. Mr. G. C. DORLING pointed out that there was a danger of pneumothorax in the administration of the analgesic.

Mr. J. GABE said that he had always found the collateral circulation in the upper limb ample, and referred to a case in which he had tied the innominate, subclavian, and common carotid arteries without any gangrene resulting.

Urethane for Leukaemia

Dr. T. ST. M. NORRIS demonstrated two cases of leukaemia treated with urethane. He had had them under observation for about 10 months, and, while pointing out that it was much too early to draw definite conclusions from the use of urethane, said that the results seemed to be as good as those obtained by deep *x*-ray therapy. The danger of agranulocytosis was always present, and it was very difficult to know when the maximum benefit had been received from urethane and to stop the use of the drug before agranulocytosis appeared.

Dr. B. GOTTLIEB said that urethane appeared to be quite useless in acute leukaemia; there might be a temporary improvement in subacute cases, but in chronic cases he had had an excellent response followed by relapse after the end of the treatment. A second course of treatment resulted in less marked improvement, and eventually the cases became resistant. However, urethane was at least as beneficial as deep *x*-ray treatment. He referred to a case of Hodgkin's disease in a girl of 16 who as a result of treatment with urethane now appeared perfectly well, and he suggested that it was well worth trying urethane in such cases.

Dr. G. SLOT thought the risk of agranulocytosis was very real, one of the great difficulties being that it might start at any moment without warning. With regard to the use of deep *x*-ray treatment for myelocytic leukaemia, he had investigated the results in a series of cases, and on comparing them with a similar series untreated found that there was no lengthening of life.

Correspondence

International Society of Surgery

TRÈS HONORÉ CONFRÈRE,

Le Comité Organisateur du XII[e] Congrès de la Société Internationale de Chirurgie qui s'est tenu à Londres du 14 au 20 septembre dernier comprenait les noms de la plupart des dirigeants des grands hôpitaux d'Angleterre, d'Ecosse, et d'Irlande. Ces confrères non seulement ont comblé les chirurgiens étrangers très nombreux à Londres de prévenances, mais leur ont encore ouvert largement leurs services hospitaliers pour leur permettre de se rendre compte des progrès considérables réalisés depuis la guerre dans l'installation de vos hôpitaux et dans les techniques chirurgicales.

Au nom des quelques 700 congressistes, nous vous prions de transmettre à tous les chirurgiens britanniques l'expression de toute notre reconnaissance.

Veuillez agréer, très Honoré Confrère, l'assurance de nos sentiments les plus distingués.

L. MAYER,
Président.
L. DEJARDIN,
Secrétaire-Général.

Acute Porphyria

SIR,—We have read with particular interest the letter on this subject by Dr. Leo Rau (Sept. 13, p. 433), since many of his observations are of the greatest significance to our conceptions of the disease. The isolation of uroporphyrin from cases of any of the diseases cited by Dr. Rau—viz., meningitis, encephalitis, meningo-encephalitis, generalized herpes zoster, disseminated sclerosis, poliomyelitis, and subacute combined degeneration—is of such fundamental importance that we hope that Dr. Rau will publish his findings in greater detail as soon as possible. That coproporphyrinuria—i.e., an increase above the normal in the quantity of coproporphyrin isomers I and III excreted daily in the urine—may occur in a variety of pathological conditions including lead poisoning and hepatic diseases is well known. The appearance of uroporphyrin, however, is much rarer. In fact, indisputable evidence for the presence of uroporphyrin in the urine has only been forthcoming in the conditions of congenital porphyria (mainly isomer I, some isomer III) and acute porphyria (mainly isomer III). If Dr. Rau's claim can be substantiated, clearly our present viewpoint must be reconsidered. We very much hope that when Dr. Rau presents his findings in detail he will indicate whether the observed excretions were of type I or type III porphyrins.

We cannot, however, agree that porphyrin must be neurotoxic, since Klüver[1] has claimed that the normal central nervous system contains numerous microscopical granules which exhibit a red fluorescence in ultra-violet light and which possess some of the properties of porphyrins. The excretion of porphyrins in degenerative diseases of the central nervous system might equally well be the result of the degeneration rather than that the degeneration should be a result of the formation of porphyrins.

Lastly, we are surprised that Dr. Rau finds an excretion of uroporphyrin or an excessive excretion of coproporphyrin in the faeces in haemorrhage from the gut, as we should have expected any such excess of porphyrin to be limited to protoporphyrin and its near derivatives, mesoporphyrin and deuteroporphyrin.—We are, etc.,

C. RIMINGTON.
CHARLES H. GRAY.

London.

REFERENCE

Kluver, H. (1944). *Science*, **99**, 482.

Sudden Death after Intravenous Injection

SIR,—I was interested by Dr. A. G. Oettlé's article (Oct. 4, p. 530), as I had a sudden death from this cause some years ago. The patient was a man of 83 who had auricular fibrillation and congestive heart failure. He was fully digitalized, and I gave him one dose of "salyrgan" intramuscularly, but it acted very slowly and the diuresis kept him awake all night. So two

days later I gave him a dose intravenously. Shortly after the needle had been withdrawn his breathing became stertorous, and he died very quickly.

Another patient to whom I gave a great many intravenous injections of salyrgan died suddenly on hearing an air raid warning. I mention this to show that there is an element of chance in these cases, and possibly the minute shock of the injection may be the real cause. At one time I thought that venipuncture might cause more shock than one ordinarily credits, and to test it I became a blood donor; but I never noticed the slightest effect myself.

Sudden death can occur from injections of a more simple kind. In 1942 I was called to see a man of 40 who had severe substernal pain of a few hours' duration, which I diagnosed as coronary thrombosis. I decided to give morphine and had to wait several minutes for some water to be boiled, during which I talked to the patient. I then gave him 1/3 gr. (22 mg.) of morphine subcutaneously, but "as I plucked my cursèd steel away" his breathing became stertorous, and he died in a few minutes. There was not time for the drug to have acted, even if it had been given intravenously. Was it the slight shock of the injection added to the already desperate condition of the heart, or was death at that moment pure chance? It did not seem so to his wife, who was present all the time.—I am, etc.,

Norwich. FREWEN MOOR.

Poliomyelitis

SIR,—Mr. Chapman Pincher (Sept. 6, p. 396) states: "There is, however, one persistent source of fresh human stools, open to visitation by flies, embracing every town. I refer to our vast network of railway lines. Because of the primitive sanitation on our trains and the large number of apparently healthy people who may be poliomyelitis carriers, railway tracks may be an important source of the virus." One aspect of our investigation into the spread of poliomyelitis at the Hospital for Sick Children, Toronto, Canada, has been a study of the conditions that exist in the homes, and especially in homes remote from large centres. At the beginning of our field work this year we were getting cases from small isolated rural centres. In the field studies in these places our most isolated cases were in close proximity to railway tracks, often a very short distance, a matter of yards, from the railway tracks.

In a spot map the bulk of cases in the first group reported from the Province of Ontario were distributed along railway lines or along main routes of travel. One very suggestive study was in a farmhouse where there were seven people in the family. Two children developed poliomyelitis; one died with the bulbar type. None of the others in the family had been ill or had differed in their eating or visiting habits over the preceding month from the two children with poliomyelitis, except that within the incubation period of the disease the two children had eaten wild strawberries along the railway track, which easily could have been directly contaminated from the train or by flies.

This observation of the proximity to railways in our early rural series certainly makes us believe that such possible source of virus should be seriously considered and attempts made to confirm or disprove the possibility that this may be a very real source of dissemination of the poliomyelitis virus. Our observation may be possibly interpreted on the basis of chance, but in view of our experiences it would be interesting to know whether other medical men have made similar observations respecting the localization of cases in the vicinity of railway communications. We are fully appreciative of the limitations of the observations we have made, and our investigations are still in course of progress. But in view of Mr. Pincher's letter we thought it might be of interest to record these observations.—I am, etc.,

Toronto, Canada. NELLES SILVERTHORNE.

SIR,—Dr. John Mills's letter (Sept. 27, p. 507) on the use of "prostigmin" in cases of poliomyelitis suffering from paralytic ileus is a reminder that disturbances of the autonomic nervous system occur not infrequently in that disease.

It is well known that a high proportion of adult patients suffer from retention of urine, but the fact that the bladder can be made to empty by an intramuscular injection of 0.25 mg. of carbachol seems to have been ignored. I have records of three cases in which catheterization was avoided by this means, though in one it was necessary to administer the drug twice daily for four days before normal function returned. In a fourth case with intercostal paralysis carbachol was tried, but, doubtless owing to the simultaneous administration of atropine in an attempt to keep the respiratory tract dry, it failed.

I note that the only patient whose age Dr. Mills gives was a woman of 50. It would be interesting to know whether, as in retention of urine, paralytic ileus is commoner in the higher age groups.—I am, etc.,

Bristol. D. S. SHORT.

Spasm in Poliomyelitis

SIR,—Is it possible that controversy on the existence of spasm in poliomyelitis may arise from differing conceptions of the meaning of the word? I have been able to follow a number of cases of the disease during the present epidemic from the early stages well into convalescence. I have not observed any true spasm in the sense that affected muscles have developed a pull without voluntary action on the part of the patient. I have, however, seen many muscles which had lost their extensibility from the earliest days of the disease, and these were tender and painful, particularly on attempted passive stretching.

Apart from the erector spinae those most often affected have been the biceps, hamstrings, and calf muscles, which are notoriously prone to develop contractions. They have usually been only partly paralysed from the outset, and have regained power well, though extensibility has only been recovered by the most careful physiotherapy. In one case in which this was handicapped by seven weeks in a respirator shortening of the biceps remains after 4½ months, though their power is sufficient to flex the elbows against gravity and some resistance.—I am, etc.,

Luton, Beds. H. B. LEE.

Treatment of Varicose Veins

SIR,—My friend Mr. W. D. Park's reference to me (Oct. 4, p. 547) is my excuse for attempting rather late to enter this discussion. He has perhaps too sparingly reported me and so missed my point, which is that varicose veins thrombosed apparently solidly and hard by sclerosants seldom fail to be recanalized completely even after many months. I have removed by biopsy a short length of varicose vein, to sight and touch a hard cord, ten months after sclerosant injection, and found it only partly occluded by thrombus and with blood flowing through it. The thrombus firmly adherent to one side of the vein would, presumably, have been digested in due time, and the varicosity become plainly "recurrent." If "injected" cases, with or without concurrent or subsequent ligation, had been followed up for periods over ten months, "injections," however little harmful, would long ago have been abandoned as useless.

I submit that attention has been wrongly fixed on "thrombosis"—an incidental concomitant of the phlebitis and periphlebitis. In a series of biopsies I observed that recanalization always occurred unless the vein wall became necrosed, and with necrosis the injected vein was soft, not hard. The vein cannot be permanently occluded by firm hard clot undergoing a complete fibrosis, converting the vein into some sort of solid cord to be slowly absorbed. "Sclerosing" injection fails to obliterate the vein. These biopsies revealed that phlebitis and periphlebitis must be severe and extensive enough to destroy the vein's nutrient vessels. "Necrosing" injection will obliterate the vein, in the end without trace, by causing its death *in situ*. This necrosis in severity, extent, and possible harmfulness is not within the injector's control (while a scalpel is).

Many patients have varicose veins on both legs. This opportunity to try a different method (there have been more than one of fair surgical repute) on each leg in the same man, a perfect control, was seized. My cases at this hospital have been nearly all seamen, who were medically examined before signing on for each voyage, recurrences of varicose veins being sent back to hospital. My follow-up has therefore been adequate. Several years' observation made it clear that the least unsatisfactory method (none in my hands was 100% satisfactory) and the one with fewest recurrences, and of which the men made no complaints on score of pain, discomfort, loss of voyage and wages, was the rather slowly arrived-at method of multiple resection-

divisions-extractions, by which the whole varicose vein could be extirpated through incisions—rarely more than 1/4 to 1/3 in. (0.63–0.85 cm.) in length—at intervals along the vein, the sites for incision carefully selected in the standing patient and indelibly marked before operation. The incisions, made parallel to the lines of tension of the skin, gape but little and do not require suturing. Only very few ligations of severed veins are ever necessary, and perforating veins and tributaries can be divided and ligated or, if small, torn off flush with the deep fascia without the use of a vein enucleator.

In some cases new varicose veins have appeared so soon after extirpation of the old as to raise inescapably the question of overloading in the deep veins and a new compensatory reflux through deep communicating veins, and the wisdom of severing all deep communications, if that were feasible.

Here I take opportunity to record my indebtedness to Mr. Park's painstaking anatomical studies (*Lond. Hosp. Gaz.*, 1945, 48, 221). He has demonstrated the number, complexity, and variability of the communications, deep and superficial, of the veins of the leg, and thus provided illuminating and irrefutable anatomical warning—a timely reinforcement of the conclusions many of us had come to from clinical studies—that it is not feasible on any occasion to deal with more than a very few of the deep communications.—I am, etc.,

London, E.16. H. M. Hanschell.

Sir,—The article by Prof. A. M. Boyd and Mr. D. J. Robertson (Sept. 20, p. 452) with instructive phlebograms will I fear lead some to be less radical in their attacks upon varicose veins. It has always been accepted that solutions injected into varicose veins *must* inevitably enter the deep veins—and that very promptly, the patient noticing the taste of the solution within a few seconds of the injection. It has always been thought that the deep veins escaped damage because of the large volume of swift-flowing blood they contained diminishing internal damage, but most of all they were unaffected by sclerosing solutions because they were healthy normal veins.

I have encountered quite a number of Army pensioners with femoral thrombosis following ligatures and injections, but I have ascribed this complication to the long rest in bed (2–3 weeks) allowed after the operation of ligature or the occurrence of superficial thrombosis. Conditions in the Army apparently made it difficult to follow the ambulatory routine of civil life following ligatures and superficial thrombosis. I do not recall a single femoral thrombosis in a very large series of my own treated strictly on ambulatory lines. Others of the Army cases I have seen were due to operating on cases with bad thrombophilic histories, cases usually avoided for fear of stirring the hornets' nest.

Varicose veins are as hard to eradicate as rabbits, and if the article of Sept. 20 induces some to pull their punches I fear the pest of varicose veins will start to gain upon us again. For my part I will continue to inject downwards from the top ligature (if there is no valvular obstruction), upwards and downwards from the lower thigh ligature, downwards from the external saphenous ligature, and upwards from the excellent Dodds's ligature of the internal saphenous at the ankle. Up to a total of 100 ml. of 30% brine is used if the patient is anaesthetized, and less painful solutions if not. Following this all thrombosed veins are injected at weekly intervals. The foundation stone of success is to achieve a firm solid saphenous vein from groin to knee following the ligature.—I am, etc.,

London, W.1. A. Dickson Wright.

Leprosy and its Problems

Sir,—In the leading article (June 7, p. 813) and in Dr. Bernard Moiser's letter (Aug. 30, p. 347) mention has been made of cockroaches as possible carriers of lepra bacilli. The idea that insect vectors play a role in transmission of the disease is evidently sound. But if an insect is to blame it could not be the cockroach, at least not exclusively. In this country we have had leprosy for centuries, but the disease is now practically extinct. It could not have been transmitted by cockroaches, because they did not exist in this country until a decade or two ago and are still practically unknown in the countryside, where leprosy has had its origin.

If an insect is a vector of this disease, lice or fleas are more likely to be instruments of transmission than any others. Leprosy is a disease of filth and disappears with cleanliness. It flourished in the Dark Ages, when the human body was neglected and when the old maxim of St. Jerome was still valid, that "*poenitens eo foetidior, eo pulcherrior.*" The common belief that leprosy is transmitted by sexual intercourse might find its explanation in a transfer of phthirius inguinalis. In this connexion it may be mentioned that McCoy and Clegg found acid-fast bacilli which seemed to belong to the leprosy family in lice. The fact that savages are exempt might be explained by their nakedness and consequent inability to breed the body louse. When the savage begins to wear clothes and live in houses he will contract the disease, if the opportunity for infection is there. All this could fit in with the louse as vector.—I am, etc.,

Reykjavik. Niels Dungal.

Foetal Cries

Sir,—The prenatal cries of the Trowbridge foetus reported by Dr. E. Curphey (Sept. 27, p. 508) were anticipated by one at Strasbourg in 1821. A detailed account of the occurrence is given in a letter by Dr. William Lister to the *Edinburgh Medical and Surgical Journal* of October, 1822. There are remarkable points of similarity in the two cases.

The mother of the Strasbourg foetus had suffered repeated losses of liquor amnii up to the last month of her pregnancy. A sudden stumble, followed by considerable loss of liquor, occasioned unusually violent foetal movements and, to quote the author, "all at once the company present were alarmed by the cry of a child." The crying was repeated and "distinctly came from the womb of the patient. After a time it desisted." Two days later, in the eighth month of pregnancy, the mother went into labour and was delivered by cephalic presentation of a foetus of a premature infant. "The new born child," says the doctor, "gave a few weak tones" and died half an hour after birth. The author's comments on the aetiology of the event are worth repeating: "To judge from the evacuation of water, about the middle of the pregnancy, it may be well supposed that there had been some rent in the membranes by means of which the air was probably introduced. From the foregoing, it may then be well comprehended how the child cried; but how it could live 48 hours in the confined womb, surrounded with water in an amphibious manner is incomprehensible."

There may well have been other occasions between 1821 and 1947 when premature loss of amniotic fluid, air round the foetal face, and contraction of the uterus on the foetal chest have combined to produce cries loud enough to astonish the neighbours.—I am, etc.,

London, S.W.1. W. Hartston.

The Extent of Neurosis

Sir,—I cannot let Dr. D. Yellowlees's letter (Sept. 20, p. 468) pass without comment. After reading the leading article on "Neurosis in Industry" (Aug. 16, p. 257) I had originally considered the results of my small survey in the form of a short article, but I did not think it worth the space and condensed the material into a letter (Sept. 6, p. 396). I agree that "more emotionally ill than actually so" is not altogether a very apt phrase, but it is not easy to define shortly the difference between an illness due to the invasion of external elements, or failure of internal mechanism, and regarded with no undue alarm by the patient, and the exaggeration of discomfort energized principally by an increase in already present strong basic anxiety, probably acting through endocrine channels and along pathways of outlet grooved from early childhood. By "actual" I meant "in terms of physical pathology" rather than and as different from a state of psychical activity.

I am in complete agreement with the fifteenth paragraph of Dr. John Rickman's very apposite article (Sept. 6, p. 363), which formulates the situation of the bromide-receiving woman perfectly, and Dr. Yellowlees will notice that I rate her as 100% ill. By "normal ailment" I meant one which is understandable and treatable in physical terms of microbic invasion and chemotherapy, and which is the normal sphere of the physician. To

the psychoneurotic the physician can only be a "wet shoulder" and a generous giver of palliative sedatives, for the conduct of a psychotherapeutic analysis, involving many hours of a specialized relationship over many months and interacting problems, is beyond both the time and the scope of the general practitioner, even if the patient were willing to undergo it. I need hardly remind Dr. Yellowlees of the degree of resistance of these anxiety-ridden people.

Whatever may be the genesis of "sufferings which lead to 'trivial or pointless complaints,'" to quote Dr. Rickman, they are kept in being by a dynamic vicious circling of anxiety which is rooted in disharmony of human relationships, both between the patient and his idealized image of himself and between him and his outer circle of relationships. The disharmony is in latent hostility and dependence and can grow like a weed as readily in a country cottage as in a town house. My own impression is that the disorders and evacuations of war, by adding what the German psychologists call *Angst der Kultur* to the inner anxiety, will produce a considerably increased crop of character disorders, if not actual neuroses, in the next 25 years. Society is already aware of it, in the widening provision of child guidance clinics.

If one has the time one will find disharmony and misery behind the demands for a nerve tonic, but nothing out of a bottle will help it to change. I would suggest to both Dr. H. G. St. M. Rees and Dr. Charles Shearer (Sept. 20, pp. 468 and 469) that the answer lies in the psychic walls built round an originally defenceless and unloved personality, which, while protective, prevent him from human community and participation; and let me add that they can be as strong as ferro-concrete and as crippling as osteo-arthritis.—I am, etc.,

Stockton-on-Tees. L. F. Donnan.

Homosexual Offences and Psychotherapy

Sir,—Everyone must be grateful to Dr. F. H. Taylor for his most interesting paper on "Homosexual Offences and their Relation to Psychotherapy" (Oct. 4, p. 525). There is a great shortage of facts regarding sexual abnormalities, and in the past prison medical officers, who have valuable opportunities of studying severe and chronic cases, have published little. This is, of course, not intended to minimize the very valuable contributions of Sir Norwood East.

One would naturally expect Dr. Taylor's views to be pessimistic, since in prison psychiatry the hopeless cases and failures are most likely to be met, while the successfully treated ones live normal lives. If I might be permitted to show the brighter side of psychotherapy I would cite a case of a Jewish woman aged 33 who was married, with two children. She suddenly found that she was falling in love with a pretty Irish maid and could not tear herself away from this girl. She wished to give her presents, dress her in different clothes, touch her, but not make any actual overt sexual approach. A few years previously she had fallen in love with another married woman. This patient was treated once weekly for three months. She lost her abnormal attachment, discovered she was able to feel real affection for her husband (whom she had liked but not really loved previously), and for the first time in her life had an orgasm. No doubt Dr. Taylor would say that this was not a genuine case of homosexuality, but one can always use this argument when insisting that "genuine" cases are not curable. I could produce other similar cases which have recovered under psychotherapy.

Dr. Taylor brings forward no evidence to dispute my contention that the so-called bisexuals are really partly developed homosexuals. Moreover, it is difficult to know where there is "a perversion in the psychiatrical sense" and where there is "sheer depravity." Surely this depends on the outlook of the observer? I doubt whether the prostitute group is not composed of partly or wholly developed homosexuals also. Can anyone imagine that shortage of money would lead a normal man into homosexual prostitution? I can imagine many crimes from burglary down that most normal men would prefer. I would agree most whole-heartedly with Dr. Taylor's finding that the dreams accompanying nocturnal emissions are homosexual in inverts. In my experience they are almost entirely so, and why Hubert and East found otherwise is a mystery. I have always used the dream content to show the progress of a patient under treatment, since it invariably changes as the patient recovers, and it is a bad sign if it does not do so.

It is obvious from Dr. Taylor's own statistics that punishment has no satisfactory effect, since so many cases have previous convictions. My own solution to this problem is that there should be a definite clinic for psychosexual conditions to which the courts send these cases for psychotherapy. The psychiatrists working on this one type of case would be certain to become more skilled than otherwise, and the patients more likely to be cured. Cases which did not respond and who were a menace to the community should be segregated under the best possible conditions, which surely could "differ appreciably from a prison sentence."—I am, etc.,

London, W.1. Clifford Allen.

Treatment of Homosexuals

Sir,—Dr. F. H. Taylor's article (Oct. 4, p. 525) on homosexual offences makes me wonder once again why one never sees any mention of gonadal treatment in these cases; surely it must have some effect on at least a proportion.

A few years ago on transferring to a new area I came across a health visitor, aged about 35, who had a very deep voice and a distinct moustache. She had had a major operation, presumably a hysterectomy, about a year previously for dysmenorrhoea. About a year after I met her she was forced to leave the district as there had been several complaints from the mothers of girl guides in a company which she ran. I do not know exactly what these complaints were, but it was common local gossip that the girl was a homosexual. I feel sure that if this girl had been given appropriate hormone treatment at the time of and subsequently to her operation she would not have become a Lesbian.

I should be interested to know if others have any experience of these cases being prevented or alleviated by hormone therapy.—I am, etc.,

Rushden, near Buntingford, Herts. L. M. M. Beadnell.

New Treatment of Rheumatoid Arthritis

Sir,—If, as Dr. G. L. Kerr Pringle (Oct. 4, p. 547) suggests, Dr. Imre Barsi's hypothetical anti-rheumatic substance (Aug. 16, p. 252) is a known hormone, it may be chorionic gonadotrophin or some other. If it is not chorionic gonadotrophin—and the remission of rheumatoid arthritis often begins so early in pregnancy as to suggest that it is not—then the anti-rheumatic substance, or more properly the balance of definite blood values of a number of hormones which has an anti-rheumatic effect, is likely to be present in the blood during the progestational phase of menstruation.

Although, as far as I am aware, no regular amelioration of symptoms between the 14th and 28th days of the menstrual cycle has been reported in rheumatoid arthritis, it seems reasonable to start the investigation of haemotherapy in this disease with trials of progestational blood, which is so much more easily obtainable than pregnancy blood. Dr. Barsi apparently did not make his injections at any particular phase of menstruation, nor does he mention any side-effects on the periods and the breasts, which one might expect. It would be interesting to know if there are any.—I am, etc.,

London, S.W.3. John Ebbetts.

Supplementary Petrol

Sir,—Honesty is no longer the best policy. The medical profession have recently filled in their application forms for supplementary petrol and given an honest estimate of the total quantity of "motor fuel" required per month in their practices, but they have found in return that the Ministry of Fuel and Power has reduced all their allowances by 10%.

Surely, Sir, this is a case of class warfare at its worst. The bacilli, cocci, vibrios, and spirochaetes have not been asked to make a similar 10% reduction in their attacks on the community, and they will therefore gain an unfair advantage over the profession.—I am, etc.,

London, W.8. H. Stephen Pasmore.

POINTS FROM LETTERS

Mind and Matter

Dr. E. V. PIERCY FOX (Keston, Kent) writes: In connexion with the correspondence on the above subject may I quote Prof. A. N. Whitehead: "It seems that in bodies that are obviously living a co-ordination has been achieved that raises into prominence some functionings. . . . For lifeless matter these functionings thwart each other and average out so as to produce a negligible total effect." On this view the difference between the living and the lifeless is one of organization and not of ultimate nature. The mind-matter problem arose with the domination in thought of Cartesian dualism, mind and matter becoming irreconcilable substances.

Medical Certificates

Dr. C. SPENCER WHITEHOUSE (Birmingham) writes: There is a practice which has become established during the last few years and which recently has expanded to such an extent as to constitute a major annoyance to all of us in general practice. I refer to the pernicious practice of requiring a medical certificate for practically any article that is in short supply. There is some reason in requiring a certificate from a doctor for some article which could reasonably be associated with the health of the patient and which a doctor might be reasonably expected to order—e.g., a vacuum flask. But when patients come and request a "note" for electric light, gas fires, bedsteads, and above all an electric immersion heater, I think it is stretching the point too far. The latest request has been for a note to enable a patient (a young expectant mother) to purchase a baby's bath. It was not enough for her to produce her baby's ration book. . . .

Milk Ration

Dr. C. J. PENNY (Winchester) writes: I venture to suggest that the time has now arrived when reconsideration should be given to the arrangements of the milk ration. In these last few weeks the general scarcity of milk has resulted in considerable hardship to many non-priority members of the public, and it is a matter of some difficulty for doctors to decide whether in borderline cases the priority certificate should be given when it is known that the general public's supply is thereby prejudiced. Since the commencement of the scheme the unit of priority has been one pint (568 ml.) of milk. I suggest that if the unit were reduced to half a pint the scheme could then be made far more flexible and fairer to all members of the community. If the half-pint unit were adopted, it would be possible under Group I to certify one to four units; under Group II, one to two units. Such an alteration would not greatly increase the doctor's work in respect of the individual certificate, though no doubt a greater total number of certificates would be issued. . . .

Bodies for Dissection

Dr. O. P. CLARK (Worthing, Sussex) writes: May I suggest the simplest method of dealing with these cases is by communicating with the professor of anatomy at the university or college most likely to be interested. In my own case only a year or so ago I contacted King's College of London University, of which I am an ex-student, and was treated with the utmost courtesy and consideration. Now the necessary papers, including the appropriate form issued by the Home Office, are duly filed with my will, and whether my wishes could or might be flaunted by any executor or other interested party I doubt very much, but this seems most unlikely. Incidentally, it is clearly stipulated that ordinary expenses are to be paid by the anatomy department and provision is made for religious observance and eventual burial in ground that has been suitably consecrated. . . .

Control of Tuberculosis

Dr. SYDNEY GORDON TIPPETT (Horsham, Sussex) writes: The recent International Conference of Physicians has given the profession no fresh light on the real problem, which is how best to control tuberculosis. In the discussion on tuberculosis most of the speakers seemed with faint praise to damn the use of B.C.G., yet in the *Sunday Times* of Sept. 21 Lord Moran pleaded for the use of B.C.G. to protect those persons who were especially liable to become infected. From the report in the *Journal* (Sept. 20, p. 462) it seems that no mention was made of the problem—how to protect the recently infected person (child or adult) from developing tuberculosis at some later date. This was a tragic omission.

Let every effort be made to thoroughly try out any treatment that may be claimed will protect a human being from becoming infected, yet when that treatment has been found the way must still be found how to control tuberculosis. Koch nearly 50 years ago pleaded for the immediate treatment as soon as tuberculin showed the presence of tuberculosis. He was confident that such early cases, if treated, could have the disease arrested and in most cases would be cured. . . .

Obituary

W. ERNEST MILES, F.R.C.S.

A memorial service to Mr. Ernest Miles was held on Oct. 8 at Holy Trinity Church, Marylebone. The address at this service was given by Sir Gordon Gordon-Taylor, in the course of which he said:

. . . The name of Ernest Miles had been known to me by reason of his reputation as an operator and through his early writings from almost the beginning of the century, for he had already attained to the senior honorary staff of the Cancer Hospital, as that great institution was then designated, in the year when I first secured a medical qualification. About 1911 I became personally acquainted with him, when along with myself he was invited to become a member of the Surgical Club, one of the first, if not the very first, of those small coteries of men, meeting together for the promotion of surgical knowledge by informal conference and by travel. I still remember the thrill of belonging to a group which included surgeons like Wilfred Trotter, Percy Sargent, Sherren, Handley, and Ernest Miles himself.

On his maternal side Irish blood flowed in his veins, and some of his ancestors had served with Wellington in the Peninsular Wars. It was therefore not surprising that with this family military tradition, with so many personal attributes that make for leadership, with his passion for the horse and horsemanship, and his love of the copses and thickets and the greensward, he should have been a Territorial Officer in the years before the first Armageddon. I had the privilege of working alongside him for several months during the autumn of 1917 at an advanced abdominal centre just outside the walls of Ypres, where was collected together much of the "abdominal talent" of the British Expeditionary Force. It was an international group in very truth, for there were surgeons from the U.S.A., Canada, Australia, and New Zealand, as well as English, Scots, and Irish, and Miles was largely responsible for the wonderful friendship, the good fellowship and camaraderie that prevailed amidst that group, working "at the back of the front," on 16-hour "shifts" for months on end, in unpleasant, noisy, and sleepless surroundings, and he made of us a "brotherhood-in-arms."

He had a genius for friendship, and the deft fingers from which skill and pity flowed added adoring patients to the circle of his friends. He never said an unkind word of anyone, and if he could say nothing laudatory he kept his own counsel. In the words which Gibbon, the historian, used of Fox, it might be said of Ernest Miles: "Perhaps no man was ever more perfectly exempted from the taint of vanity, malevolence or falsehood." His philosophy of life might be briefly, yet imperfectly, expressed in the following lines:

> From quiet home and first beginning
> Out to the undiscovered end
> There's nothing worth the wear of winning
> But laughter and the love of friends.

But for Miles there was something else worth winning—the conquest of disease and the relief of pain and suffering. It was the character and personality as well as the surgical achievement of men like himself and his colleague Charles Ryall that raised the prestige of the Royal Cancer Hospital and bequeathed to it a tradition to be maintained by their younger associates—by men like Jocelyn Swan, Percy Cole, Cecil Rowntree, and Cecil Joll. He was possessed of courage in abundance and a self-assurance and confidence which he could impart to others. . . .

Those who have been reckoned great in surgery must have been supremely skilled in the craftsmanship of our profession; they must by reason of the initiation of some novel and successful system of treatment have conferred untold blessing on mankind; their work must have illumined the dark, mysterious chasms in our knowledge of disease. It is necessary that they should have inspired their pupils and their surgical brethren with their own ideals, and should have inaugurated or sponsored some policy which has advanced the science and art of surgery. Ernest Miles fulfilled these criteria right well. . . .

This is not the time or place to discuss the details of his contributions to operative surgery; others more skilled than myself have already paid tribute to these in the medical press. In the words of Oliver Cromwell, "To be a Seeker is to be of the best Sect next to a Finder, and such a one will every faithful humble Seeker be at the end"; and Miles was happily spared to see the day when the methods which he had so long championed and employed during the dangerous pioneer period with unswerving conviction and dauntless courage became the recognized practice, now rendered safe by modern discoveries even in hands less deft and sure than his. . . . Academic honours came to him from many lands: from America, France, Greece. He was an international figure, and his work

influenced not only those of his own Britain but of lands beyond the seas.

Up there within the shrine on the old Castle Rock which looks out over the Scottish capital there is a corner dedicated to those of the Royal Scottish Fusiliers who perished in the first great war, and on the walls you may see inscribed those words which Thucydides, that consummate master of prose, puts in the mouth of the great Athenian, Pericles: "The whole earth is the tomb of great men. Nor is their name graven only in stone which covers their clay, but abideth everywhere without visible symbol, wrought in the stuff of other men's lives."

The tradition of Ernest Miles will live on not only in British surgery, but in the surgery of the world in the years that lie ahead. Let us thank God for the gift of Ernest Miles.

ERIK LYSHOLM

Prof. Erik Lysholm, the eminent Swedish radiologist, died in Stockholm on Sept. 26, aged 55. He had contributed much to diagnostic radiology, particularly on the neurological side. Educated at Uppsala University, he spent nearly all his professional life in Stockholm, the city of his birth.

The first radiological problem to which he applied himself was the accurate and thorough *x*-ray examination of the skull. Realizing that this could not be achieved with the standard apparatus, he set to work to design a skull table. Aided by his own considerable mechanical ability and by Georg Schonander, the engineer, he produced the first so-called "precision skull apparatus" in the late 'twenties. Since that time a number of improvements have been made, but fundamentally the apparatus has not altered and no other apparatus can compare with it for skull work.

Lysholm's greatest contribution to the physical side of radiology was the so-called fixed or Swedish grid. This simple device is placed in front of the *x*-ray cassette and greatly reduces scattered radiation, thereby improving the quality of the picture. There must be few *x*-ray departments in Europe or America without this grid, a certain tribute to its worth.

As a physician Lysholm will be remembered best for his original work on the accurate localization of brain tumours. It is nearly thirty years since air was first used in the ventricles of the brain for the localization of tumours, but it was left to Lysholm's genius to extract the maximum value from this method. In 1937 he published his famous monograph, "The Ventriculogram." It embodied the results of nearly 500 confirmed cases of brain tumour submitted to ventriculography. Lysholm clearly showed the various ventricular deformities produced by tumours growing from all parts of the brain. The method is so accurate that it is difficult to see how it can be improved, except perhaps in very small details. Latterly, his main scientific interests were in cine-radiology and the use of radio-active isotopes in radiology.

With the death of Lysholm the world loses not only one of its greatest radiologists but also a remarkable personality. Modest and shy by nature, all who knew him well deeply valued his warm heart. He had an unusual capacity for getting the very best out of his assistants and co-workers. He felt strongly that a team was necessary in such work as he was doing. This team was directed by his genius, but his modesty would not allow him to take more than a share of the credit.—J. W. D. B.

Dr Anthony Joseph Borg died suddenly on July 7. Born in Sliema, Malta, in 1889, he graduated at Malta University in 1913. He joined the P. & O. Navigation Co., and was surgeon on the Egypt–Brindisi and London–Japan routes. In the 1914–18 war he served in the hospital ship *Sicilia* between Southampton and Boulogne and was in the first ship to return the "Old Contemptibles." Then he joined the Colonial Service and was posted to Fiji, serving as medical officer and at times as district commissioner for twenty-six years. After his retirement from the Service in 1942 he came to Auckland, New Zealand, where he practised as a physician. His cheerful personality endeared him to his patients and friends. His death robs the medical profession of a loyal colleague.—F. J. G.

George Cecil Strathairn died suddenly at Nicosia, Cyprus, on Sept. 19. He was actively engaged in professional and social activities until two days before his death. Dr. Strathairn graduated at Edinburgh in 1901, and he took the certificate of the London School of Tropical Medicine and Hygiene in 1903 and the D.P.H. in 1912. He entered the Colonial Medical Service soon after qualifying, and served in various parts of the world, including East Africa, Uganda, Fiji, Jamaica, and Cyprus. In 1929 he was appointed Director of Health, Cyprus, a post which he occupied until his retirement in 1933. His period of office was marked by great advances in the public health administration of the island. A sanitary inspectors' school was opened and attempts were made to improve village hygiene and sanitation through the medium of propaganda conducted by lectures, films, and personal contact with the villagers. After his retirement Dr. Strathairn decided to make a permanent home in Cyprus, for which country he had a great affection. In 1940 he rejoined the Service as a temporary district medical officer, and his experience proved of great value. Latterly he had concentrated on the organization of an aerodrome medical reception centre, and this work occupied more and more of his time. Dr. Strathairn, who had been a member of the British Medical Association since 1909, was honorary secretary and treasurer of the Jamaica Branch from 1926 to 1929 and represented the Branch at the Annual Representative Meeting at Manchester in 1929. From 1936 to 1938 and from 1942 to 1946 he was honorary secretary of the Cyprus Branch, and was its president in 1938–9.

H. M. S. writes: Strathairn's social activities were many. He was a very keen freemason, a prominent member of the local club, and for some time secretary of the racing club. His standard of personal conduct was very high, and it can be said with truth that he lived to serve others. His unselfishness, his generosity and kindliness, his broad humanity, his wisdom and his humility associated with a charm of manner, stamped Strathairn as a great personality. He will live in our memories as a charming companion and a noble colleague.

Dr. Henry George Ramsbottom died at his home in Rochdale on Sept. 20 at the age of 63. His health had been poor for some years and he had had several periods of enforced inactivity. He struggled manfully against his disabilities and was in active practice until three weeks before his untimely death. He studied medicine at Edinburgh, and took the Scottish triple qualification in 1909. After acting as resident at Larbert and Perth Mental Hospitals he went to New Zealand to serve in the Mental Hospital Service at Christchurch. He returned to England in 1914, married, and entered general practice in Rochdale, where he spent the rest of his life, apart from service in the R.A.M.C. in 1916–17, when he was with the Ulster Division in France. Dr. Ramsbottom joined the British Medical Association in 1911. He took a keen interest in medical affairs and was seldom absent from B.M.A. and Panel Committee meetings. He was a member of the local medical war committee from its inception, and he was chairman of the Division in 1939–41. As recently as August the St. John Ambulance Association conferred on him the rank of Commander in recognition of over thirty years' devoted service. In charge of an A.R.P. post during the recent war, he was unsparing in time and trouble to ensure the efficiency of his unit. A Conservative in politics, he took an active part in local affairs. He was a member of the Rochdale Town Council from 1924 to 1930, but resigned when he became debarred under the 1930 Act because of his tenure of the appointments of public vaccinator and district medical officer. Outside his professional activities, "Rammy's" interests were mainly in sport. In his younger days he was a keen cricketer, and later took every opportunity in his leisure time to watch local and county cricket. He was also greatly interested in the Rugby League game and acted for many years as medical officer to the Rochdale Hornets. Until prevented by disability he was an enthusiastic, if only moderately proficient, golfer. He was by nature simple, direct, and kindly, and as a consequence it can truly be said that his friends were many and his enemies few, if any. He is survived by his widow and a married daughter, to whom we offer our sympathy.—L. K.

Dr. Helen Mary Dixon, who died at a Bath hospital on Sept. 20 at the age of 69, was the only daughter of the late Mr. P. R. Dixon, of Manchester. After nursing experience in the first world war, and training as a midwife at the Rotunda Hospital, Dublin, she began the study of medicine later in life than is usual, and graduated at Bristol in 1925, when she was 46. For many years she did valuable part-time work as medical officer in charge of various infant welfare centres in Bristol and in Bath, and during the recent war she worked also in the school medical department at Bath, where she came to live about fourteen years ago. She was an excellent teacher and gave many courses of lectures for the Red Cross and other organizations. Mothers had great confidence in her judgment because they realized how deep was the personal interest she took in themselves and in their children. She had a forceful and attractive personality, and was much loved by her friends

and patients, who will alike miss her greatly. She held strong views about many social and medical problems, views which she put forward with characteristic good-natured vigour and tenacity. She was on the council of the National Gardens Guild and was an active member of the Bath Soroptimist Club. —J. F. B.

Dr. James George Copland died in a Leeds nursing home on Sept. 21 at the age of 65. He was a student of Aberdeen University, graduating in 1906, and proceeding M.D. in 1920. Dr. Copland had been in practice in Huddersfield for thirty-six years. After a brief period as house-physician and house-surgeon to the ophthalmic department of the Aberdeen Royal Infirmary he went out to West Africa and served in South Nigeria for two years. In 1911 he went into general practice in partnership with Dr. James Raffan, of Huddersfield. Later he practised independently and succeeded the late Dr. John Irving as borough police surgeon, a position he held for twenty-three years. During the 1914–18 war he served in the R.A.M.C. with the rank of captain. Dr. Copland was greatly interested in all types of sport, and particularly golf, curling, and football. He married Dr. Margaret C. Douglas in 1936. He will be greatly missed in Huddersfield, where for many years he had been one of the best known and most popular general practitioners.

Dr. Herbert Shackleton died on Sept. 22 at the age of 84. Dr. Shackleton had been in practice for almost fifty years in Bradford, where he was one of the best known and most popular practitioners. He studied medicine at the University of Glasgow and at Leeds and qualified in 1885. He was in practice in Listerhills Road, Bradford, and had served on the Bradford City Council for nine years. Over the same period he was chairman of the Bradford Health Insurance Committee; he had been a member of the B.M.A. continuously for fifty years, and was chairman of the Bradford Division in 1922–3. For fifty-five years he had been a member of St. Mary Magdalene's Church, where a memorial service was held for him, and he had served for many years as a churchwarden. Advancing age had in no way diminished his grasp of affairs or his judgment. At the age of 80 he was elected chairman of the local insurance committee for the eighth successive year.

Dr. Thomas Ferguson died at Crieff on Sept. 23 at the age of 92. Dr. Ferguson graduated M.B., C.M. at Edinburgh in 1877. Three years later he settled in Dumfries, and there he remained in practice until his retirement in 1927.

Dr. Walter Woodley Stocker died suddenly on Sept. 28 at the age of 82. A student of St. Mary's Hospital, he took the Conjoint Diploma in 1889 and settled in general practice in Willesden after two years in Brondesbury. He was the last doctor in Willesden to possess a horse brougham. Dr. Stocker always took a great interest in local government. He was a member of the first Willesden District Council, and was chairman of the local fever hospital for six years. He was one of the first doctors to be attached to the Willesden General Hospital at its foundation. He had been district medical officer under the old Hendon Board of Guardians and then under the Willesden Board, retiring under the age limit in 1934. He had been a member of the B.M.A. for fifty-five years, and was chairman of the Willesden Division in 1924–5. Two years later he enjoyed reading his own obituary notices. He was said to have been the victim of an avalanche disaster in Switzerland. Dr. Stocker was popular as a general practitioner and as a public figure in Willesden, and he went into retirement in 1936.

Dr. Robert John Helsby, who died on Sept. 30 at the age of 62, was a native of Denbigh, and was educated at Denbigh National School and Denbigh County School. He took the Scottish triple qualification in 1910. He had been president of the Students' Society, and became demonstrator of anatomy for two years. He took over the practice of the late Dr. Richard Jones, of Bangor, whose daughter he married. During the 1914–18 war he served in the R.A.M.C., and was awarded the Military Cross and the French Croix de Guerre. He had been surgeon to the Caernarvonshire and Anglesey Infirmary, medical officer to the Post Office and Board of Education, and Admiralty surgeon. He was elected a member of the Caernarvonshire County Council in March, 1919, and became an alderman in 1940. Always keen on B.M.A. work, he had been president of the North Wales Branch in 1938–9, and had served on the local Insurance Committee from 1927, acting as chairman in 1932. He was elected a member of the Panel Committee in 1936, and had been chairman from 1939 to the time of his death.

Prof. Luigi Carozzi, formerly Chief of the Industrial Health Service of the International Labour Office, and now holding the chair of industrial medicine at Geneva University, writes: I have just learnt the sad news of the passing of my old friend Dr. J. C. Bridge, with whom I have been in close correspondence till quite recently. His death is a grievous loss, not only for his friends, but for all those medical men in Great Britain and in other countries who over many years have followed the work accomplished by him in the field of industrial medicine. The ranks of the "old guard" in this field are thinning out, and but too few of the younger men are ready to step into their places, which is a matter of grave concern.

Universities and Colleges

UNIVERSITY OF CAMBRIDGE

The Rockefeller Foundation has made a grant, available for one year, of $2,500 for the University to purchase equipment in the United States of America for use in facilitating research under the direction of Prof. J. S. Mitchell, Ph.D., M.B., B.Chir., of the Department of Radiotherapeutics.

Titles of degrees were conferred by diploma on the following members of Girton and Newnham Colleges during August and September: J. M. Cockrell, M.B., B.Chir., M. Sutcliffe, M.B., J. Crossley, M.B., B.Chir., H. A. Jaques, M.B., B.Chir., Mrs. M. R. Simpson, M.B., B.Chir., S. G. Wills, M.B., B.Chir.

UNIVERSITY OF DUBLIN

Moyne Institute of Preventive Medicine

As a memorial to the late Lord Moyne, who was assassinated in Egypt in 1944, his family have offered to bear the cost of building and equipping an institute, to be called "The Moyne Institute of Preventive Medicine," in Trinity College, Dublin. The Board of the College have gratefully accepted this munificent benefaction. The institute will provide urgently required accommodation for teaching and research in bacteriology and immunology and will also house the new Department of Social Medicine which the College authorities have decided to establish.

ROYAL COLLEGE OF SURGEONS OF ENGLAND

Lectures in otolaryngology will be delivered at the College (Lincoln's Inn Fields, London, W.C.) on Nov. 3, 4, 5, 6, 7, 10, 11, 14, 17, 18, 19, and 21, at 6.15 p.m. The fee for the whole course is £5 5s.; Fellows and Members of the College and Licentiates in Dental Surgery will be admitted for £3 3s. Applications, accompanied by a cheque, should be sent to the secretary, Postgraduate Education Committee, Royal College of Surgeons of England, Lincoln's Inn Fields, London, W.C.2.

A series of twenty practical demonstrations in anatomy will be given at the College (Lincoln's Inn Fields, London, W.C.) during the six weeks beginning on Nov. 3. The fee for the series is £7 7s., which includes access to the dissection room during the whole period. Applications for admission, together with a cheque for £7 7s., should be sent to the secretary, Postgraduate Education Committee, Royal College of Surgeons of England, Lincoln's Inn Fields, London, W.C.2.

Research Scholarships will shortly be awarded by the College. There are two vacant Leverhulme Research Scholarships of the annual value of £400, with an allowance not exceeding £100 for expenses of research, tenable for one year in the first instance, but renewable at the discretion of the Council. The awards will be made either as scholarships or as grants-in-aid, according to the time available for research work. Scholars may be male or female, and must hold a medical qualification registrable in the United Kingdom or a university degree. Scholars must devote themselves to the investigation of some biological or clinical problem of disease as it occurs in man, with a view to the extension of surgical knowledge. Facilities for research will be available in the Bernhard Baron laboratories of the College in Lincoln's Inn Fields or at the Buckston Browne Farm, Downe, Kent. Applications, stating the nature of the proposed research and accompanied by a recommendation from a member of the staff of the applicant's medical school or university, should be sent to the secretary, Royal College of Surgeons of England, Lincoln's Inn Felds, London, W.C.2, before Oct. 27.

ROYAL COLLEGE OF OBSTETRICIANS AND GYNAECOLOGISTS

At a special meeting of Council, held on Oct. 3, with the President, Mr. William Gilliatt, in the chair, the Honorary Fellowship of the College was conferred on Prof. J. M. Munro Kerr, Prof. C. G. Lowry, Sir Ewen J. Maclean, and Sir William Fletcher Shaw. A

report of the ceremony was published in the *Journal* of Oct. 11 (p. 583).

The following were formally admitted by the President to Fellowship:

G. S. Brown, G. A. Davies, G. P. FitzGerald, A. M. Johns, F. G. McGuinness, R. McRobert, R. C. Thomas.

The following were formally admitted to Membership:

H. B. Bagshaw, G. H. Bancroft-Livingston, Isabella R. Bishop, J. T. S. Brown, Gwendoline E. Cockrem, J. McD. Corston, G. A. Craig, K. J. R. Cuthbert, G. L. Daly, R. W. Danziger, B. C. Dastur, Josephine A. Davidson, N. E. C. de la Hunt, W. P. G. Dickson, I. Donald, I. A. Donaldson, Sara M. Field-Richards, T. B. FitzGerald, I. T. Fraser, A. M. Giles, A. McM. Graham, E. F. B. Hamilton, A. J. Hardy, Lois E. Hurter, D. W. James, D. H. Lees, M. Lipsitz, G. I. Louisson, W. Love, C. J. MacKinlay, J. T. Mair, P. Malkani, Eileen C. Miller, W. G. Mills, P. R. Mitchell, J. D. Murdoch, Mary L. Neville, E. R. Ormerod, H. G. Page, Nancy Perry, E. E. Philipp, J. G. Pritchard, E. Rawlings, Elizabeth M. Rose, D. A. Fletcher Shaw, D. J. N. Smith, R. A. R. Taylor, J. Walker.

At the close of the ordinary meeting of Council on Oct. 4 Mr. Humphrey G. E. Arthure, M.D., F.R.C.S., assumed the office of honorary secretary.

Medico-Legal

ANOTHER CARBACHOL ACCIDENT

[From Our Medico-Legal Correspondent]

At a Stourbridge inquest held on July 17 a local practitioner gave evidence that a patient of his had died from an overdose of carbachol. The patient had been suffering from cancer; no bed was available in hospital, and a resident surgical officer advised an injection of carbachol. The doctor purchased three ampoules from the local chemist and, after reading the instructions, dissolved the contents of one ampoule and injected the solution into the patient's arm. The man immediately collapsed and died before an antidote could be given. When the doctor examined the other ampoules he realized that they were not the ones he had expected; each contained 0.1 g. whereas the proper dose was 0.25 mg. He said that when he had received them there had been nothing to indicate that they were not for injection. Evidence was given that the patient must in any event have died soon. The coroner remarked that if the doctor had spent a considerable time reading the instructions down to the last word, it would probably have occurred to him that the dose he was giving was 400 times too strong. The jury returned a verdict of accidental death and exonerated the doctor and the chemist, but considered it desirable that greater care should be taken with the instructions put up in individual packages of such drugs.

This is the fourth fatal accident that has resulted, since the introduction of carbachol into this country in 1941, from confusion between the two forms in which the drug has been marketed. One set of ampoules contains a therapeutic dose, the other contains crystals for use in ionization. In an action against the suppliers arising out of an accident at Oxford,[1] it was shown that the boxes of ampoules containing the crystals of "moryl" were sent out with a pamphlet similar to that put into the boxes of ampoules containing the therapeutic dose, stating that the correct dose was half to one ampoule but giving no warning that the crystals were not suitable for injection. Heavy damages were given against the suppliers, who stated that they had done and were doing everything possible to recall all boxes of crystals. It is to be hoped that the publicity given to this latest unhappy accident, together with the renewed efforts which the suppliers will doubtless make, will result in the recall of the remainder.

[1] *British Medical Journal*, 1946, **1**, 1002 (and see also 1942, **2**, 28, and 1945, **1**, 62).

Though leprosy has for long been rare in Britain, cases among soldiers returning from the Far East have been reported (*Journal*, May 24, p. 731). A pamphlet entitled *The Homes of St. Giles for British Lepers* is therefore timely, and gives a brief account of these Homes from their voluntary foundation in 1914 to the present day. Nearly 60 patients, including 6 women, have been treated in the colony, which can at present accommodate 10 men and 3 women. Recreations of all kinds are arranged for the patients, and those who are able to do so are encouraged to work at gardening and keeping livestock for the colony.

No. 39

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended Sept. 27.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for: (a) The 126 great towns in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1947 (a)	(b)	(c)	(d)	(e)	1946 (Corresponding Week) (a)	(b)	(c)	(d)	(e)
Cerebrospinal fever	30	1	18	1	—	32	6	19	1	2
Deaths		1	—				—	2		
Diphtheria	184	22	37	19	6	285	15	79	26	14
Deaths	3	—	—	—	—	7	—	1	—	—
Dysentery	87	7	18	2	—	66	6	40	1	—
Deaths				—	—				—	—
Encephalitis lethargica, acute	2	—	—	—	—	2	—	1	—	—
Deaths		—					—			
Erysipelas			39	7	1			39	9	1
Deaths		—					—			
Infective enteritis or diarrhoea under 2 years				83					57	
Deaths	87	5	26	9	4	47	3	5	6	3
Measles*	1,139	39	56	117	—	1,461	69	79	29	6
Deaths	1	—	1	—	—	1	—	1	—	—
Ophthalmia neonatorum	44	2	16	—	1	67	3	18	1	—
Deaths										
Paratyphoid fever	10	2	1 (B)	—	—	19	1	7 (B)	—	—
Deaths	—	—	—	—	—	1	—	—	—	—
Pneumonia, influenzal	257	16	1	1	3	373	13	4	3	—
Deaths (from influenza)†	2	—	2	—	—	5	2	1	—	—
Pneumonia, primary			135	6				118	35	
Deaths		19		7	6		18		3	8
Polio-encephalitis, acute	32	5				—	—			
Deaths		—					—			
Poliomyelitis, acute	441	30	110	4	1	30	3	3	6	1
Deaths		1					—			
Puerperal fever		1	10		1		—	6		—
Deaths										
Puerperal pyrexia‡	104	9	3	2	—	164	13	17	—	2
Deaths		—					—			
Relapsing fever	—	—			—	—	—			—
Deaths										
Scarlet fever	880	83	181	33	32	1,001	65	168	36	35
Deaths	1	—	—	—	—	1	—	—	—	—
Smallpox	—	—	—	—	—	—	—	—	—	—
Deaths				—	—				—	—
Typhoid fever	22	—	2	1	1	12	1	1	3	1
Deaths	1	—	—	—	—	1	—	—	—	—
Typhus fever	—	—	—	—	—	—	—	—	—	—
Deaths				—	—				—	—
Whooping-cough*	1,105	117	39	44	3	1,451	81	78	39	28
Deaths	6	—	—	4	1	8	1	—	—	1
Deaths (0–1 year)	369	31	67	32	15	355	42	56	19	24
Infant mortality rate (per 1,000 live births)										
Deaths (excluding stillbirths)	3,665	569	482	179	102	4,187	615	573	183	121
Annual death rate (per 1,000 persons living)			10·0	11·3				12·6	11·7	
Live births	8,659	1349	1076	361	247	9,545	1414	1081	505	243
Annual rate per 1,000 persons living			21·7	22·8				21·7	32·4	
Stillbirths	222	30	26			275	29	46		
Rate per 1,000 total births (including stillborn)			24					41		

* Measles and whooping-cough are not notifiable in Scotland, and the returns are therefore an approximation only.

† Includes primary form for England and Wales, London (administrative county), and Northern Ireland.

‡ Includes puerperal fever for England and Wales and Eire.

EPIDEMIOLOGICAL NOTES

Poliomyelitis and Polio-encephalitis

There was a further decline in the notifications of poliomyelitis 402 (441) and of polio-encephalitis 27 (32) in England and Wales in the week ended Oct. 4. As was to be expected, the decline since the peak figure of 662 notifications of poliomyelitis in the week ended Sept. 6 has been much slower than was the rise. It seems probable therefore that a fairly high incidence may persist for the rest of this year. If there is a relatively high winter incidence there may be opportunities for comparisons of the epidemiological behaviour of the disease in summer and in winter. The rise and fall of the notifications over the last eight weeks is shown in the table.

Week Ending	Notifications		Percentage Increase or Decrease on the Preceding Week (Poliomyelitis)
	Poliomyelitis	Polio-encephalitis	
Aug. 16	646	45	+13·5
" 23	626	50	− 3·1
" 30	612	45	− 2·2
Sept. 6	662	46	+ 8·1
" 13	572	42	−13·5
" 20	571	23	− 0·2
" 27	442	32	−22·6
Oct. 4	402	27	− 9·05

There were eight more notifications 38 (30) of poliomyelitis and two fewer cases 3 (5) of polio-encephalitis in London administrative county. The number of deaths ascribed to poliomyelitis and polio-encephalitis in the year 1947 has so far been 36 in London A.C. This compares favourably with the number of deaths due to whooping-cough 68, and to road traffic accidents 247.

Perhaps the most noteworthy decline in the notifications of poliomyelitis was in Yorkshire (West Riding) 18 (34).

Full details of notifications by age groups are not yet available for England and Wales; the cases notified up to the end of August were:

Age	Yorkshire (East and West Riding)	North-east Region	Northern Ireland	Scotland
Under 5	105 (47·5%)	182 (46·6%)	43 (31·5%)	168 (50·0%)
5–14 ..	66 (29·5%)	122 (31·3%)	52 (38·0%)	108 (32·2%)
15–24 ..	24 (10·5%)	50 (13·0%)	12 (8·6%)	26 (8·0%)
25+ ..	28 (12·5%)	36 (9·1%)	30 (21·9%)	33 (9·8%)

Comparison with earlier years shows that there has been an increase in the average age at onset. Mortality figures for England and Wales are not yet available, but the provisional figure for July suggests that the case mortality is about 10%.

Cholera in Egypt

An official telegraphic report, dated Oct. 8, from the Egyptian Ministry of Health gives the following distribution of 366 confirmed cholera cases between Sept. 22 and Oct. 6:

Cairo	14	Dakahlia	11
Sharkia	135	Gharbia	3
Kaliubia	164	Giza	2
Alexandria (imported) ..	1	Suez	4
Menoufia	7	Ismailia	25

Cases have since been notified from Beheira and Girga and from Damietta and Port Said. The present epidemics in Egypt and in India are discussed in an annotation at p. 619 of this issue.

Discussion of Table

In *England and Wales* further increases were reported in the incidence of scarlet fever 75 and measles 73, while a decrease was recorded for whooping-cough 273, acute poliomyelitis 130, dysentery 13, and paratyphoid 13.

The only variations in the local trends of scarlet fever were increases in London 26, Yorkshire West Riding 25, and Durham 25. For the second week a small increase in the notifications of measles has occurred; the only rise of any size during the week was Lincolnshire 46.

The largest decreases in the incidence of whooping-cough were Lancashire 54, Warwickshire 39, and Middlesex 36. An increase of 9 in the incidence of diphtheria was notified in London. A further 18 cases of diphtheria were recorded in the outbreak in Birmingham C.B. The largest return of cases of dysentery was Lancashire 14.

In *Scotland* decreases were recorded in the notifications of acute poliomyelitis 38, diphtheria 13, and dysentery 7, while an increase was reported for scarlet fever 39. The decrease in cases of poliomyelitis was general, while the fall in the incidence of diphtheria was mainly contributed by Glasgow.

In *Eire* an increased incidence was recorded for measles 33, scarlet fever 12, and diphtheria 13, with a decrease in the notifications of diarrhoea and enteritis 9. The small rise in the notifications of measles and diphtheria was fairly general, but the increase in cases of scarlet fever was confined to Dublin C.B.

In *Northern Ireland* only one case of poliomyelitis was notified compared with 10 in the preceding week. The notifications of scarlet fever declined by 12.

Week Ending October 4

The notifications of infectious diseases in England and Wales during the week included: scarlet fever 1,086, whooping-cough 1,086, diphtheria, 218, measles 1,256, acute pneumonia 330, cerebrospinal fever 46, acute poliomyelitis 402, acute polio-encephalitis 27, dysentery 97, paratyphoid 16, and typhoid 12.

Medical News

B.M.A. Library

The Association's Library is to be transferred from its present accommodation in the main building at B.M.A. House to the first and second floors of the Garden Court wing. To facilitate the removal the Library will be closed from 12.30 p.m. on Saturday, Nov. 1, until 9.30 a.m. on Monday, Nov. 17.

Beckenham Hospital

At a meeting of the board of governors of Beckenham Hospital on Sept. 23 Dr. Richard Alfred O'Brien, C.B.E., was presented with an illuminated address and a cheque on his resignation of the post of honorary clinical pathologist and blood transfusion officer of the hospital. The address included an appreciation of Dr. O'Brien's "invaluable voluntary services over a period of eight years, during which time he has devoted himself whole-heartedly to the interests of the Hospital." Dr. O'Brien, who was elected a vice-president of the hospital in recognition of his exceptional services, has now left England for Australia. He was director of the Wellcome Physiological Research Laboratories from 1914 to 1939.

Princess Ashraf Visits Hospitals

Princess Ashraf, twin sister of the Shah of Persia, arrived in London on Oct. 9 for a short visit under the auspices of the British Council. During her stay in this country she will study British nursing and nursing methods and see something of Britain's social services. The plan for her programme includes visits to some of the big London hospitals, a day nursery, a child welfare clinic, one of the Dr. Barnardo's Homes, and a tour arranged by the National Council of Social Services.

Streptomycin in Scottish Hospitals

The Department of Health for Scotland has arranged for the treatment of selected cases of meningeal and miliary tuberculosis with streptomycin. Practitioners who have patients suitable for such treatment should apply through the medical officer of health. The following hospitals have been selected:

Aberdeen.—The City Hospital.

West Lothian.—Bangour Hospital.

Glasgow.—The Royal Hospital for Sick Children and the Knightswood Hospital.

Four local committees under the chairmanship of the deans of the university faculties of medicine will select patients suitable for treatment.

Wills

Sir Almroth Edward Wright, who died on April 30, aged 85, left £47,904. Dr. Louis Cobbett, formerly lecturer in bacteriology at Cambridge University, left £52,687.

COMING EVENTS

Heberden Society

The annual general meeting of the Heberden Society will be held at 11, Chandos Street, Cavendish Square, London, W., to-day and to-morrow (Friday and Saturday, Oct. 17 and 18). At 4.30 p.m. on Oct. 17 there will be a business meeting at which officers, etc., will be elected, and at 4.45 p.m. a discussion on "Ankylosing Spondylitis" will be opened by Dr. C. W. Buckley, followed by Mr. N. L. Capener (Orthopaedics) and Dr. I. G. Williams (Radiotherapy). On Oct. 18, at 11 a.m., short communications will be presented. The annual dinner of the Society will be held at Kettner's Restaurant, Romilly Street, W., on Oct. 17, at 7.45 for 8 p.m.

Kent Paediatric Society

At the next general meeting of the Kent Paediatric Society, to be held at Maidstone County Hall to-morrow (Saturday, Oct. 18), at 3 p.m., Dr. J. Alison Glover will deliver the presidential address on "The Paediatric Approach to Tonsillectomy." Visitors will be welcome.

Marie Curie Hospital

The Duchess of Gloucester, President of the Marie Curie Hospital, will open the new nurses' home of the hospital at Hurdon House, 6, Fitzjohn's Avenue, Hampstead, N.W., on Wednesday, Oct. 22, at 3 p.m.

Save the Children Fund

The twenty-eighth annual meeting of the Save the Children Fund (20, Gordon Square, London, W.C.1) will be held at the Waldorf Hotel, Aldwych, London, W.C., on Wednesday, Oct. 22, at 3 p.m., when the speakers will be the Rt. Hon. George Tomlinson, M.P., Minister of Education, the Rt. Rev. Bernard O. F. Heywood, and Dr. Eleanor M. Singer.

Society of Medical Officers of Health

On Thursday, Oct. 23, at 6 p.m., at B.M.A. House (Tavistock Square, London, W.C.), Dr. Frederick Hall will be installed as president of the Society of Medical Officers of Health for 1947–8 by the retiring president (Sir Allen Daley) and will deliver his presidential address, entitled "The Economics of Public Health."

Children's Moral Welfare Committee

The annual meeting of the Children's Moral Welfare Committee (Rescue and Preventive) for Hampstead and St. Pancras will be held at Hampstead Town Hall on Friday, Oct. 24, with the business meeting at 5 p.m. and the general meeting at 5.15 p.m.

Nutrition Society

The Nutrition Society has arranged a whole-day conference on "British Needs and Resources of Calories, Protein and Calcium" to be held at the London School of Hygiene and Tropical Medicine, Keppel Street, Gower Street, W.C., on Saturday, Oct. 25, at 10.30 a.m.

Venereal Diseases

The Medical Society for the Study of Venereal Diseases will hold its General Meeting at 2.30 p.m. on Oct. 25 at 11, Chandos Street, Cavendish Square, London, W.1. Dr. C. S. Nicol will read a paper on "Gonorrhoea in the Female." The following lectures will be delivered on the dates shown: "Psychological Aspect of Venereal Disease," by Dr. Wittkower, on Nov. 29; "Neuro-syphilis," by Dr. Purdon Martin, on Jan. 31, 1948; "Crime in Relation to Sex," by Dr. Holden, on Feb. 28; "Venereal Disease in Ophthalmology," by Mr. Lindsay Rea, on March 27; "History of Venereal Disease," by Mr. Johnstone-Abrahams, on April 24; Presidential Address on July 31.

Medical Society of London

The first half of the 1947–8 session of the Medical Society of London (11, Chandos Street, Cavendish Square, W.) opened on Oct. 13 with a pathological meeting. Other meetings have been arranged as follows: Monday, Oct. 27, 8.30 p.m., discussion on "Treatment of Peptic Ulcer," to be introduced by Dr. A. H. Douthwaite and Mr. Norman Tanner; Monday, Nov. 10, 8.30 p.m., discussion on "Cardiac Pain," to be introduced by Dr. William Evans; Monday, Nov. 24, 8.30 p.m., discussion on "Tumours of the Bladder," to be introduced by Messrs. E. W. Riches, W. Somerville Mack, and Ronald W. Reid; Monday, Dec. 8, 8.30 p.m., discussion on "Teaching and Research in Social Medicine," to be introduced by Prof. J. A. Ryle. The Lettsomian Lectures on "Clinical Pathology in Relation to Medical Practice" will be delivered by Dr. Cuthbert E. Dukes on Mondays, Feb. 16 and 23 and March 15, 1948, at 9 p.m., and Dr. A. H. Douthwaite will deliver the Annual Oration on Monday, May 10.

Cambridge Medical Graduates' Club

It is hoped to revive the activities of the Cambridge Medical Graduates' Club with a sherry party at the Apothecaries' Hall (Black Friars Lane, Queen Victoria Street, London, E.C.) on Thursday, Oct. 30. As the secretaries of the club have been unable to trace a large number of old members, all who have not received notices should communicate with Dr. R. A. Hickling, of 99, Harley Street, London, W.1. The subscription to this mainly social club is £1 1s. for life membership. There have been no new members since 1939. All Cambridge medical men are eligible for election, and those who have qualified since 1939 are urged to get in touch with their hospital representative or with Dr. Hickling.

SOCIETIES AND LECTURES

Royal College of Surgeons of England, Lincoln's Inn Fields, W.C.—Wednesday, Oct. 22, 5 p.m. Arris and Gale Lecture by Mr. H. F. Lunn: A Contribution to the Anatomy of Inguinal Hernia; Friday, Oct. 24, 5 p.m., Arnott Demonstration by Mr. H. F. Lunn: The Pelvis and the Erect Posture.

Royal Society of Medicine

Special Meeting of Fellows.—Tuesday, Oct. 21, 5.30 p.m. To consider addition to By-law VI.1.

General Meeting of Fellows.—Tuesday, Oct. 21, 5.45 p.m. Ballot for election to the Fellowship.

Section of Experimental Medicine.—Tuesday, Oct. 21, 5 p.m. Discussion: Renal Circulation. Openers: Dr. J. Trueta and Prof. K. J. Franklin.

Section of Pathology.—Tuesday, Oct. 21, 8.15 p.m. Presidential Address by Dr. A. B. Rosher: Some Observations on *H. influenzae* and its Pathogenicity.

Section of Endocrinology.—Wednesday, Oct. 22, 5 p.m. Clinical meeting.

Section of Urology.—Thursday, Oct. 23, 8 p.m. Presidential Address by Mr. W. W. Galbraith: Modern Trends in Prostatic Surgery.

Section of Paediatrics.—Friday, Oct. 24, 5 p.m. (Cases at 4.15 p.m.)

British Institute of Philosophy.—At University Hall, 14, Gordon Square, London, W.C., Friday, Oct. 24, 5.15 p.m. Dr. K. R. Popper: Moral and Political Aspects of Science.

Eugenics Society.—At Royal Society's rooms, Burlington House, Piccadilly, London, W., Tuesday, Oct. 21, 5.30 p.m. Mr. B. S. Bramwell: Galton's "Hereditary Genius" and the Three Following Generations since 1869. All interested in the subject are invited to attend the meeing.

London: University College, Gower Street, W.C.—Tuesday, Oct. 21, 5.15 p.m. Dr. Bernard Katz: Some Properties of Resting Nerve and Muscle Fibres. Wednesday, Oct. 22, 5 p.m. Dr. M. H. Pirenne: Physiological Mechanisms of Vision.

Nutrition Society.—At London School of Hygiene and Tropical Medicine, Keppel Street, Gower Street, W.C., Saturday, Oct. 25, 10.30 a.m. Conference on British Needs and Resources of Calories, Protein, and Calcium.

Royal Institute of Public Health and Hygiene, 28, Portland Place, W.—Wednesday, Oct. 22, 3.30 p.m. Mr. J. Lyle Cameron: The Care of the Mother (Illustrated).

Royal Medical Society, 7, Melbourne Place, Edinburgh.—Friday, Oct. 24, 8 p.m. Mr. G. M. Turner: Dissertation.

Society for the Study of Addiction.—At Medical Society of London, 11, Chandos Street, W., Tuesday, Oct. 21, 4 p.m. Dr. A. E. Carver: Alcoholism from the Psychosomatic Point of View.

POSTGRADUATE DIARY

Edinburgh Royal Infirmary.—Thursday, Oct. 23, 4.30 p.m. Honyman Gillespie Lecture by Prof. John McMichael: Heart Failure of Pulmonary Origin.

London Chest Hospital, Victoria Park, E.—Friday, Oct. 24, 5 p.m. Dr. Bertram Jones: Some Types of Pneumonia.

London School of Dermatology, 5, Lisle Street, Leicester Square, W.C.—Tuesday, Oct. 21, 5 p.m. Dr. F. R. Bettley: Eczema.

The Fellowship of Medicine announces the following postgraduate courses: (1) Obstetrics and gynaecology, at Radcliffe Infirmary, Oxford, all day, Oct. 21 to Oct. 31. (2) Week-end course in rheumatism, at St. Stephen's Hospital, Fulham Road, S.W., all day, Saturday and Sunday, Oct. 25 and 26. (3) Course in proctology, at St. Mark's Hospital, all day, Oct. 27 to Nov. 1. Full particulars can be obtained from the Fellowship of Medicine, 1, Wimpole Street, London, W.

Under the Oxford University postgraduate scheme a second refresher course for general practitioners will be held at the Royal Victoria and West Hants Hospital, Boscombe, from Oct. 20 to Nov. 1 inclusive. As before, local practitioners may attend some or all of the lectures and where the whole course is to be attended application should be made to the Dean, 41, St. Giles, Oxford. In the case of a few isolated lectures, however, practitioners will be made welcome; a syllabus will be provided upon application to the hospital. The first course, held in May last, was very well received and it is hoped that wherever possible practitioners will avail themselves of the opportunity to attend the new series of lectures.

BIRTHS, MARRIAGES, AND DEATHS

BIRTHS

Hutt.—On May 23, 1947, to Jill (*née* Chappel), B.M., B.Ch.(Oxon), the wife of Charles W. Hutt, M.B., B.Chir.(Camb.), Danedale Lodge, Minster Road, Isle of Sheppey, a daughter—Penelope.

Reilly.—On Oct. 2, 1947, in St. Mary's Hospital, W.2, to Joy (*née* Petrie), wife of Dr. M. C. T. Reilly, a son—David Tempest.

DEATHS

Bradbrooke.—On Oct. 5, 1947, suddenly, at Horsham, Hugh Nash Bradbrooke, D.M., M.R.C.P., the beloved husband of Sylvia.

Harker.—On Oct. 4, 1947, at the Southport Infirmary, Thomas Henry, M.D., L.R.C.P., M.R.C.S., of 75, Albert Road, Southport, treasured husband of Ethel Harker, and dear father of Margaret, Rosemary, and Ted.

Any Questions?

Correspondents should give their names and addresses (not for publication) and include all relevant details in their questions, which should be typed. We publish here a selection of those questions and answers which seem to be of general interest.

Prolapsed Intervertebral Disk

Q.—*What is the explanation for the intervals of quiescence in the symptoms due to a prolapsed intervertebral disk? Is there any evidence of a sloughing off of the prolapsed portion which might account for the cessation of symptoms? One author says that "a hole can usually be demonstrated which runs down into the depths of the intervertebral disk." What relation does this hole bear to the annulus? Does surgical removal of the pulp relieve the aching pain as distinct from the root pain?*

A.—The most probable explanations for the quiescence of symptoms which so often occurs in cases of prolapsed intervertebral disk are: (1) that it is due to the prolapsed material returning within the disk substance; (2) that it results from the subsidence of the oedema which has been shown to be associated with a disk prolapse in the early stages. Probably both these factors play a part. At the present time, however, there are many who believe that the oedema factor may be the major one, and the beneficial effects of resting the spine, either in a plaster jacket or in recumbency, can perhaps best be explained on this basis. The "hole" referred to is through the annulus.

Removal of the prolapsed material, which is occasionally completely extruded and lying "free" outside the dura mater, results in complete cure of the sciatica and the backache in about 60% of all patients who fail to respond to conservative treatment. If there have been recurrences of sciatica over many years there are probably interstitial changes in the root, and complete freedom from discomfort cannot be guaranteed by operation. Furthermore, if the radiographs showed marked narrowing of an intervertebral space, and if there are arthritic changes in the facet articulations, removal of a prolapsed disk cannot be expected to cure the backache. These two factors—frequent attacks of sciatica over several years, and lumbo-sacral osteoarthritis—are mainly responsible for "failures" following removal of the disk alone. It seems highly probable that in these circumstances removal should be followed by lumbo-sacral fusion performed at the same sitting.

Gold Therapy

Q.—(a) *A woman aged 40 complains of pain at the base of the left index finger and right thumb. There are definite swelling and some tenderness at these sites. In March, 1946, x-ray examination was negative and her blood normal, but now skiagrams of her hands show multiple chronic arthritis of the rheumatoid type. Otherwise she is healthy. What injection treatment is indicated and in what dosage?*

(b) *A widow aged 60 complains of a persistent ache in the left cervical region below the ear. She has some limitation of lateral movement of the head, and x rays show osteoarthritic changes generally, and particularly in the atlanto-axial joints on the left side. Is she likely to be helped by any form of gold therapy?*

A.—(*a*) There is little doubt that this is a case of early rheumatoid arthritis which should easily be arrested by adequate treatment. It is desirable that the erythrocyte sedimentation rate should be ascertained to confirm this diagnosis, and if it proves to be definitely accelerated gold treatment is indicated. This might be adopted by giving "myocrisin," the first dose to be 0.01 g., repeated in four days, then after a similar interval 0.02 g. for two doses, then 0.05 g., continuing this dose at weekly intervals for three or four months, and afterwards the same dose might be given once a month for a time as a maintenance dose. Careful watch must be kept for any sign of intolerance: the urine should be tested before each dose, a blood count done at least every three or four weeks, and any sign of skin irritation, digestive disturbance, or stomatitis will be an indication for stopping administration for a time. Its resumption would depend on developments. With this line of treatment vitamin D should be combined, preferably in the form of cod-liver oil, and vitamin C has been regarded as prophylactic against any untoward results from gold.

(*b*) Gold would be of no service in this case. It appears probable that the pain is due to the osteoarthritic changes in the cervical spine. Radiant heat and gentle massage, or short-wave diathermy, would probably give relief, but the opinion of an orthopaedic surgeon should be sought if this proves ineffective. Manipulation in skilled hands might prove helpful, but should not be attempted otherwise.

Re-employment of a Disabled Person

Q.—*A lorry driver aged 57 who had a coronary thrombosis last December has made a good, though slow, recovery. It has been agreed that he should not go back to strenuous work. He has been with his firm for more than ten years, and used to drive long hours, day and night, through the war. They refuse to have him back and give him light work. Are they allowed to do this under the Disabled Persons Act and is he entitled to compensation?*

A.—In the case quoted the employers are not bound by the Disabled Persons (Employment) Act, 1944, to take the workman back into their service, and he is not entitled to workmen's compensation unless (as seems unlikely on the facts stated) his illness is due to an accident at work. The workman is entitled to register under the Disabled Persons (Employment) Act, 1944, since his heart condition is a substantial handicap to his obtaining or retaining employment. He should go to the local employment exchange and ask to see the D.R.O. (Disablement Resettlement Officer), who will advise him as to his rights as a disabled person and assist him in finding suitable employment.

Toxicity of Ergotamine and Ergometrine

Q.—*I suffer from migraine and obtain relief from ergotamine tartrate and ergometrine. I find the latter more effective; 0.25 to 0.5 mg. is sufficient to abort most attacks. Can you give me information about the relative toxicity of ergotamine and ergometrine, their pharmacological action, and the safe limit of dosage?*

A.—Ergotamine is much more toxic than ergometrine. It is an alkaloid which has produced gangrene of the extremities in a number of reported cases, and is one of the specific alkaloids of ergot responsible for gangrenous ergotism. Ergotamine causes spasm of the arteries and capillaries, as may be shown by the change in colour it produces in the cock's comb. It is impossible to state a safe limit of dosage, as this varies so widely in different persons. Some tolerate large amounts for long periods; others have shown symptoms after only a few milligrammes. Ergometrine, on the other hand, is almost free from toxic effects; it has very little action on the blood vessels, and so far no cases of gangrene have been described. The amounts required to deal with even frequent attacks of migraine should not expose any patient to risk.

"Menstrual Tension"

Q.—*A multipara aged 45, and menstruating regularly, suffers from hot flushes and some fluid retention in the tissues. Both symptoms have been controlled apparently by about 7 mg. of stilboestrol daily. She has been taking this only during the first fourteen days of the cycle, but complains of discomfort during the second half. Her general health is good and her periods are normal. Should this high dosage be reduced abruptly or gradually? Is it true that vitamin E controls hot flushes?*

A.—Stilboestrol 7 mg. daily is a massive dose for menopausal flushes; it is rarely, if ever, necessary to give more than 0.5 mg. once or twice daily, and less than this is usually enough. Now the patient is accustomed to taking large amounts it may be difficult to wean her from it. This should be done, however, by a process of gradual and systematic reduction of the dose during the course of two to three months. If she is menstruating regularly there is reason to doubt whether the flushes are

menopausal; they, as well as her other discomforts, may be part of a "menstrual tension state," of which retention of fluid in the tissues is always a feature. This condition is typically at its worst before and is least in evidence after a period, and the fact that the patient is better during the first half of the cycle does not necessarily mean that the stilboestrol is responsible. Indeed, it may be making the premenstrual discomfort worse, because oestrogens tend to cause fluid retention.

Probably no treatment at all is needed during the first half of the cycle, but during the second half the patient should keep to a sodium-free diet and restrict the intake of fluid to not more than 1 pint (568 ml.) in twenty-four hours. Ammonium chloride, 10 gr. (0.65 g.), in capsules might also be given to promote the excretion of sodium. This type of treatment often has a dramatic effect, but if the flushes continue it would be worth while trying vitamin E in large doses—say 20 mg. of a synthetic preparation twice daily. It appears to be beneficial in relieving menopausal flushes in some cases, but it is doubtful whether any more firm statement as to its value is justifiable on the evidence so far available.

Haematospermia

Q.—*A man aged 45, otherwise apparently in perfect health, has for three months had a dark-brown coloration of the seminal fluid. What are the probable aetiology, prognosis, and treatment?*

A.—In many cases no cause can be found for a haematospermia. It is more likely to occur when there has been a mild vesiculitis, followed by a certain amount of congestion of the vesicle. Provided that any gross disease of the vesicles and prostate has been excluded the prognosis is excellent. No treatment beyond reduced sexual activity is needed.

Living with a Gastro-jejunostomy

Q.—*What are the important rules of life after a gastro-jejunostomy for duodenal ulcer? Except for insomnia after late dinner I have been fit since undergoing the operation twenty years ago. I smoke and drink moderately but have incipient pyorrhoea. I remain consistently under weight. My appetite is not good, and excess food seems to pass through semi-digested.*

A.—The questioner is to be congratulated on his good fortune; if he has no more trouble than insomnia after late dinner he has solved the problem of living happily with a gastro-jejunostomy. If rules are to be formulated, they must be similar to those for patients with peptic ulcer: regular frequent bland meals, regular hours and habits, moderation in all things, and the assiduous cultivation of imperturbable and philosophic calm. In many instances gastro-jejunostomy has been done to relieve the patient of the need for observing these rules; but it is seldom wise to relax them until six months have passed without symptoms. Intestinal hurry is a common sequel, and hence the need for frequent small meals; nutrition is also better maintained in this way as absorption is more efficient.

Sacralization of Lumbar Vertebrae

Q.—*Post-traumatic synostosis of vertebral transverse processes is not uncommon, particularly between the fifth lumbar vertebra and the sacrum. In such a case electrical treatment and massage have been advised, but this seems merely palliative. Is there any surgical treatment, or is this inadvisable owing to post-operative recurrence or adhesions?*

A.—It is true that the fifth lumbar transverse process is not uncommonly seen in radiographs to be enlarged, and this may be extensive enough to form an articulation with the sacrum or sometimes with the ilium. This abnormality is, however, congenital in origin and is known as sacralization of the fifth lumbar transverse process. It may be unilateral or bilateral. A true post-traumatic synostosis (fusion) between the transverse elements must be a rare occurrence. Trauma, however, may be superimposed upon a congenitally abnormal spine. As sacralization of the fifth transverse process is usually a symptomless condition, discovered incidentally in the course of a routine examination of the spine, great care must be exercised before attributing a patient's symptoms to the bony abnormality. All other possibilities should first be excluded. Surgical removal of the bony mass is seldom indicated; and even in cases where it has been thought that the symptoms were attributable to the abnormality—as, for example, when osteoarthritis is present in the false joint between the transverse process and the sacrum or ilium—operation has frequently been unsuccessful in relieving the disability.

Fractures of transverse processes are of importance only in that they indicate extensive tearing of muscles and ligaments; the bony injury is insignificant, whereas the injury to the soft parts is severe. As in any severe injury, rest in bed for several days until the acute symptoms have settled, followed by the wearing of a plaster-of-Paris corset for three or four weeks, is the correct initial treatment. Hyperextension exercises are started while the patient is still in plaster. They are continued when the plaster is removed, and mobilization of the injured portion of the back is assisted by physiotherapy. There has been a tendency in the past to regard this type of back injury as trivial. Unless it is treated efficiently, adhesions and a chronically painful back are likely to result. From what has been said it should be clear that excision of a transverse process because it has failed to unite is rarely if ever indicated.

NOTES AND COMMENTS

Ringworm of Scalp.—Col. W. H. Crichton, C.I.E., I.M.S.(ret.), writes from Faversham, Kent: With reference to the question and answer regarding ringworm of the scalp (Sept. 13, p. 440) I have recently had occasion to deal with a widespread outbreak of this condition among school-children in North Devon. I found that treatment with a saturated solution of potassium permanganate followed by depilation by hand and application of Whitfield's ointment for a few days was both effective and practicable. The saturated solution of potassium permanganate is applied daily for fourteen days. In most of the cases, provided these were recognized and dealt with early, the fourteen-day course proved sufficient to effect a cure. In a small proportion of cases it was found necessary to repeat the course once, and in a few odd cases which have been neglected for some time it had to be repeated for a third time to achieve a negative laboratory result. Dr. E. A. J. Byrne was kind enough to make some phenyl mercuric chloride (0.2%) available for me, but the number of cases had by then declined and there was no opportunity for me to test this form of treatment fully. However, in one case in which I tried it the effect was magical. One application for a few hours was enough to effect a cure. There is one feature of this preparation which became apparent but for which I have no conclusive evidence—namely, that it seems apt to deteriorate on keeping. This was the only explanation for the failure of phenyl mercuric chloride in two cases which presented themselves for treatment after a considerable lapse of time following the undoubted successes in the earlier cases.

"Happy Feet."—Dr. Dean A. Smith (London, W.C.) writes: May I add a word to the answer on this subject (Sept. 20, p. 476)? There is at least a probability that pantothenic acid is the B-complex factor whose deficiency is mainly responsible for the "burning-feet" syndrome (Gopalan, C., *Indian med. Gaz.*, 1946, **81**, 22). A small number of patients whose symptoms have persisted for long periods since release from Japanese prison camps have been successfully treated with calcium pantothenate. This suggests that irreversible change occurs relatively late in this condition, and that either calcium pantothenate (20–40 mg. daily) or a good preparation of whole B-complex are worth trying in cases such as that of your correspondent.

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